

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**

Matt Blunt, Governor • Doyle Childers, Director

www.dnr.mo.gov

SEP 29 2006

CERTIFIED MAIL, 70012510000573491681  
RETURN RECEIPT REQUESTED

Mr. Greg Lee, Plant Manager  
Kansas City Power & Light – Montrose Generating Station  
400 SW Highway P  
Clinton, MO 64735

Re: Kansas City Power & Light – Montrose Generating Station, 083-0001  
Permit Number: **OP2006-070**

Dear Mr. Lee:

Enclosed with this letter is your Part 70 operating permit. Please review this document carefully. Operation of your installation, in accordance with the rules and regulations cited in this document, is necessary for continued compliance. It is very important you read and understand the requirements contained in your permit.

If you have any questions or need additional information regarding this permit, please contact the Air Pollution Control Program at (573) 751-4817, or you may write to the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102. Thank you for your time and attention.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

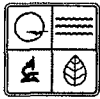


*for* Michael J. Stansfield, P.E.  
Operating Permit Unit Chief

MJS: csk

Enclosures

c: Ms. Tamara Freeman, US EPA Region VII  
Kansas City Regional Office  
PAMS File: 2004-06-071



**Missouri Department of Natural Resources**  
**Air Pollution Control Program**

## **PART 70**

# **PERMIT TO OPERATE**

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to operate the air contaminant source(s) described below, in accordance with the laws, rules, and conditions set forth here in.

**Operating Permit Number:** OP2006-070  
**Expiration Date:** SEP 28 2011  
**Installation ID:** 083-0001  
**Project Number:** 2004-06-071

**Installation Name and Address**

Kansas City Power & Light – Montrose Generating Station  
400 SW Highway P  
Clinton, MO 64735  
Henry County

**Parent Company's Name and Address**

Kansas City Power & Light Company  
PO Box 418679  
Kansas City, MO 64141

**Installation Description:**

Kansas City Power & Light - Montrose Generating Station is an electric energy generating station located in Clinton, Missouri. Equipment at the installation includes three coal-fired boilers, coal and fly ash handling equipment, miscellaneous combustion equipment, and storage tanks.

The installation is an existing major source of particulate matter less than ten microns (PM<sub>10</sub>), sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC), carbon monoxide (CO) and hazardous air pollutants (HAP).

SEP 29 2006

Effective Date

\_\_\_\_\_  
Director or Designee  
Department of Natural Resources

## Table of Contents

<b>I. INSTALLATION DESCRIPTION AND EQUIPMENT LISTING.....</b>	<b>3</b>
INSTALLATION DESCRIPTION.....	3
EMISSION UNITS WITH LIMITATIONS.....	3
EMISSION UNITS WITHOUT LIMITATIONS.....	3
DOCUMENTS INCORPORATED BY REFERENCE.....	4
<b>II. PLANT WIDE EMISSION LIMITATIONS.....</b>	<b>5</b>
<b>III. EMISSION UNIT SPECIFIC EMISSION LIMITATIONS.....</b>	<b>6</b>
EU0010 AND EU0020 – ROTARY COAL CAR DUMPER AND CONVEYOR.....	6
PERMIT CONDITION (EU0010 AND EU0020)-001 .....	6
10 CSR 10-6.060 Construction Permits Required .....	6
Construction Permit 0296-004, Issued 1/22/1996.....	6
PERMIT CONDITION (EU0010 AND EU0020)-002 .....	6
10 CSR 10-6.060 Construction Permits Required .....	6
Construction Permit 0296-004, Issued 1/22/1996.....	6
PERMIT CONDITION (EU0010 AND EU0020)-003 .....	7
10 CSR 10-6.220 Restriction of Emission of Visible Air Contaminants.....	7
EU0030 AND EU0040 – COAL TRANSFER AND CONVEYING AND FLY ASH SILO UNLOADING FROM TRUCKS .....	8
PERMIT CONDITION (EU0030 AND EU0040)-001 .....	8
10 CSR 10-6.220 Restriction of Emission of Visible Air Contaminants.....	8
EU0050 THROUGH EU0070 - BOILERS.....	10
PERMIT CONDITION (EU0050 THROUGH EU0070)-001 .....	10
10 CSR 10-3.060 Maximum Allowable Emissions of Particulate Matter from Fuel Burning Equipment Used for Indirect Heating and	
40 CFR Part 64 Compliance Assurance Monitoring .....	10
PERMIT CONDITION (EU0050 THROUGH EU0070)-002 .....	15
10 CSR 10-6.220 Restriction of Emission of Visible Air Contaminants.....	15
PERMIT CONDITION (EU0050 THROUGH EU0070)-003 .....	17
10 CSR 10-6.260 Restriction of Emission of Sulfur Compounds.....	17
PERMIT CONDITION (EU0050 THROUGH EU0070)-004 .....	19
10 CSR 10-6.270 Acid Rain Source Permits Required.....	19
PERMIT CONDITION (EU0050 THROUGH EU0070)-005 .....	20
10 CSR 10-6.350 Emission Limitations and Emissions Trading of Oxides of Nitrogen.....	20
EU0080 AND EU0090 – EMERGENCY EQUIPMENT.....	21
PERMIT CONDITION (EU0080 AND EU0090)-001 .....	21
10 CSR 10-6.260 Restriction of Emission of Sulfur Compounds.....	21
<b>IV. CORE PERMIT REQUIREMENTS.....</b>	<b>23</b>
<b>V. GENERAL PERMIT REQUIREMENTS .....</b>	<b>28</b>
<b>VI. ATTACHMENTS .....</b>	<b>34</b>
ATTACHMENT A .....	35
ATTACHMENT B .....	36
ATTACHMENT C .....	37
ATTACHMENT D .....	38
ATTACHMENT E.....	39

## I. Installation Description and Equipment Listing

### INSTALLATION DESCRIPTION

Kansas City Power & Light - Montrose Generating Station is an electric energy generating station located in Clinton, Missouri. Equipment at the installation includes three coal-fired boilers, coal and fly ash handling equipment, miscellaneous combustion equipment, and storage tanks.

The installation is an existing major source of particulate matter less than ten microns (PM<sub>10</sub>), sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC), carbon monoxide (CO) and hazardous air pollutants (HAP).

Reported Air Pollutant Emissions, tons per year							
Year	Particulate Matter ≤ Ten Microns (PM-10)	Sulfur Oxides (SO <sub>x</sub> )	Nitrogen Oxides (NO <sub>x</sub> )	Volatile Organic Compounds (VOC)	Carbon Monoxide (CO)	Lead (Pb)	Hazardous Air Pollutants (HAP)
2004	322.60	17177.15	6104.41	58.89	492.43	0.11	83.19
2003	287.28	15722.69	5113.47	51.17	426.73	0.10	71.93
2002	289.66	15825.42	5630.37	51.57	429.51	0.11	58.89
2001	280.85	15173.42	5952.98	52.94	440.72	0.35	52.62
2000	254.41	9516.84	5643.62	52.75	439.69	0.10	52.54

### EMISSION UNITS WITH LIMITATIONS

The following list provides a description of the equipment at this installation which emits air pollutants and which is identified as having unit-specific emission limitations.

Emission Unit #	Description of Emission Unit	2004 EIQ EP#
EU0010	Rotary Coal Car Dumper	EP-01
EU0020	Rotary Coal Car Dumper Conveyor	EP-01
EU0030	Coal Transfer and Conveying	EP-03
EU0040	Fly Ash Silo Unloading to Trucks	EP-09, EP-10, and EP-11
EU0050	Boiler #1	EP-06
EU0060	Boiler #2	EP-07
EU0070	Boiler #3	EP-08
EU0080	Emergency Fire Pump Engine	EP-19
EU0090	Emergency Generator	EP-220

### EMISSION UNITS WITHOUT LIMITATIONS

The following list provides a description of the equipment that does not have unit specific limitations at the time of permit issuance.

Description of Emission Source	2004 EIQ EP#
Coal storage piles	EP-02
Coal crusher (inoperable)	EP-04
One 1,000,000-gallon fuel oil storage tank, installed pre 1970's	EP-05
Fly ash unloading to open storage pile	EP-12

Fly ash pile maintenance activities	EP-13
Haul roads	EP-14
Two 40,000-gallon fuel oil storage tanks, installed pre 1970's	EP-15 and EP-16
One 10,000-gallon used oil tank	EP-48
One 2,000-gallon split diesel/gasoline storage tank	EP-202, EP-203, and EP-204
One 400-gallon diesel tank for emergency generator	EP-221
One 300-gallon diesel tank for portable pump	EP-214
One 250-gallon gasoline tank for vehicle use	EP-209
Two 240-gallon gasoline tanks, one for fire pump and one for Tainter gate engine	EP-18 and EP-63
Solvent parts cleaner/degreaser	EP-43, EP-61, and EP-205
Backup engine for Tainter gate (0.5 MMBtu/hr)	EP-64
Fly ash silo vents	EP-94, EP-95, EP-96, EP-105, and two others
Portable pump, maintenance	EP-206
Portable heating units	EP-207
Painting, maintenance	EP-208
Sand blasting, maintenance	EP-210

#### **DOCUMENTS INCORPORATED BY REFERENCE**

These documents have been incorporated by reference into this permit.

- 1) Construction Permit 0296-004
- 2) Construction Permit 0699-008

## **II. Plant Wide Emission Limitations**

The installation shall comply with each of the following emission limitations. Consult the appropriate sections in the Code of Federal Regulations (CFR) and Code of State Regulations (CSR) for the full text of the applicable requirements. All citations, unless otherwise noted, are to the regulations in effect as of the date that this permit is issued.

None.

### III. Emission Unit Specific Emission Limitations

The installation shall comply with each of the following emission limitations. Consult the appropriate sections in the Code of Federal Regulations (CFR) and Code of State Regulations (CSR) for the full text of the applicable requirements. All citations, unless otherwise noted, are to the regulations in effect as of the date that this permit is issued.

EU0010 AND EU0020 – ROTARY COAL CAR DUMPER AND CONVEYOR			
Emission Unit	Description	Manufacturer/Model #	2004 EIQ Reference #
EU0010	Rotary coal car dumper; MHDR 3000 ton/hr; installed 1996	Heyl & Patterson, Inc	EP-01
EU0020	Conveying coal from rotary car dumper to storage piles; MHDR 3000 ton/hr; installed 1996	Heyl & Patterson, Inc	EP-03

#### PERMIT CONDITION (EU0010 AND EU0020)-001

10 CSR 10-6.060 Construction Permits Required  
Construction Permit 0296-004, Issued 1/22/1996

#### Emission Limitation:

Kansas City Power & Light Company - Montrose Generating Station, (the "Permittee") shall not emit more than 14.9 tons of particulate matter less than ten microns (PM<sub>10</sub>) from the coal receiving, conveying and stacking operations during any consecutive 12-month period. [Special Condition 1]

#### Monitoring/Recordkeeping:

- 1) The permittee shall determine compliance with Condition 1 at the end of each calendar month by adding the coal received from the current month to the coal received from the previous consecutive eleven (11) months and calculating PM<sub>10</sub> emissions using the form provided (see Attachment A) or equivalent. [Special Condition 2]
- 2) The permittee shall maintain all records required by Condition 2 on-site for five years and make such records available to Department of Natural Resources personnel upon request. [Special Condition 3]

#### Reporting:

The permittee shall report to the Air Pollution Control Program Enforcement Section, P.O. Box 176, Jefferson City, MO 65102 no later than ten days after the end of the month, if the 12-month cumulative total (Condition 3) records show that the source exceeded the limitation of Condition 1 (14.9 tons PM<sub>10</sub>). [Special Condition 4]

#### PERMIT CONDITION (EU0010 AND EU0020)-002

10 CSR 10-6.060 Construction Permits Required  
Construction Permit 0296-004, Issued 1/22/1996

#### Emission Limitation:

If, in the opinion of the director, a continuing situation of demonstrated nuisance odors exists for the neighbors of the facility, the director may require the permittee to submit a corrective action plan

adequate to timely and significantly mitigate the odors. The permittee shall implement any such plan immediately upon its approval by the director. Failure to either submit or implement such a plan shall be a violation of the permit. [Special Condition 5]

**Monitoring/Recordkeeping/Reporting:**

None.

<p align="center"><b>PERMIT CONDITION (EU0010 AND EU0020)-003</b> 10 CSR 10-6.220 Restriction of Emission of Visible Air Contaminants</p>
---

**Emission Limitations:**

- 1) No owner or other person shall cause or permit emissions to be discharged into the atmosphere from any source any visible emissions with an opacity greater than 20%.
- 2) Exception: A person may discharge into the atmosphere from any source of emissions for a period(s) aggregating not more than six (6) minutes in any 60 minutes air contaminants with an opacity up to 60%.

**Monitoring:**

- 1) The permittee shall conduct opacity readings on these emission units (EU0010 and EU0020) using the procedures contained in USEPA Test Method 22. At a minimum, the observer should be trained and knowledgeable about the effects on visibility of emissions caused by background contrast, ambient lighting, observer position relative to lighting, wind and the presence of uncombined water. Readings are only required when the emission unit is operating and when the weather conditions allow. Each reading shall be for a period of six or more minutes, and the use of multiple stopwatches is not required. If no visible or other significant emissions are observed using these procedures, then no further observations would be required. For emission units with visible emissions perceived or believed to exceed the applicable opacity standard (visible and atypical emissions), the source representative would then conduct a Method 9 observation.
- 2) The following monitoring schedule must be maintained:
  - a) Weekly observations shall be conducted for a minimum of eight consecutive weeks after permit issuance. Should no violation of this regulation be observed during this period then-
  - b) Observations must be made once every two weeks for a period of eight weeks. If a violation is noted, monitoring reverts to weekly. Should no violation of this regulation be observed during this period then -
  - c) Observations must be made semi-annually. If a violation is noted, monitoring reverts to weekly. If the source reverts to weekly monitoring at any time, monitoring frequency will progress in an identical manner from the initial monitoring frequency. If the source has already performed the weekly and biweekly monitoring and is doing monitoring in compliance with a previous permit, the weekly and biweekly monitoring do not need to be repeated.

**Recordkeeping:**

- 1) The permittee shall maintain records of all observation results (see Attachment B), noting:
  - a) Whether any air emissions (except for water vapor) were visible from the emission units,
  - b) All emission units from which visible emissions occurred, and
  - c) Whether the visible emissions were normal for the process.
- 2) The permittee shall maintain records of any equipment malfunctions. (see Attachment C)



- 3) The permittee shall maintain records of any Method 9 test performed in accordance with this permit condition. (see Attachment D)
- 4) Attachments B, C, and D contain logs including these recordkeeping requirements. These logs, or an equivalent created by the permittee, must be used to certify compliance with this requirement.
- 5) These records shall be made available to the Missouri Department of Natural Resources' personnel upon request.
- 6) All records shall be maintained for five years.

**Reporting:**

- 1) The permittee shall report to the Air Pollution Control Program Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the permittee determined using the Method 9 test that the emission unit(s) exceeded the opacity limit.
- 2) Reports of any deviations from monitoring, recordkeeping and reporting requirements of this permit condition shall be submitted semiannually, in the semi-annual monitoring report and annual compliance certification, as required by Section V of this permit.

<b>EU0030 AND EU0040 – COAL TRANSFER AND CONVEYING AND FLY ASH SILO UNLOADING FROM TRUCKS</b>			
<b>Emission Unit</b>	<b>Description</b>	<b>Manufacturer/Model #</b>	<b>2004 EIQ Reference #</b>
EU0030	Conveyor belt system for transferring coal; MHDR 600 ton/hr; installed 1958	United Conveyor Corp.	EP-03
EU0040	Three places where fly ash is unloaded from silos to either enclosed or open bed trucks using telescoping arms; installed circa 1958	NA	EP-09, EP-10, and EP-11

**PERMIT CONDITION (EU0030 AND EU0040)-001**

10 CSR 10-6.220 Restriction of Emission of Visible Air Contaminants

**Emission Limitations:**

- 1) No owner or other person shall cause or permit emissions to be discharged into the atmosphere from any source any visible emissions with an opacity greater than 40%.
- 2) Exception: A person may discharge into the atmosphere from any source of emissions for a period(s) aggregating not more than six (6) minutes in any 60 minutes air contaminants with an opacity up to 60%.

**Monitoring:**

- 1) The permittee shall conduct opacity readings on these emission units (EU0030 and EU0040) using the procedures contained in USEPA Test Method 22. At a minimum, the observer should be trained and knowledgeable about the effects on visibility of emissions caused by background contrast, ambient lighting, observer position relative to lighting, wind and the presence of uncombined water. Readings are only required when the emission unit is operating and when the weather conditions allow. Each reading shall be for a period of six or more minutes, and the use of multiple stopwatches is not required. If no visible or other significant emissions are observed using these procedures, then no further observations would be required. For emission units with visible emissions perceived or believed to exceed the applicable opacity standard (visible and atypical emissions), the source representative would then conduct a Method 9 observation.

- 2) The following monitoring schedule must be maintained:
  - a) Weekly observations shall be conducted for a minimum of eight consecutive weeks after permit issuance. Should no violation of this regulation be observed during this period then-
  - b) Observations must be made once every two weeks for a period of eight weeks. If a violation is noted, monitoring reverts to weekly. Should no violation of this regulation be observed during this period then-
  - c) Observations must be made semi-annually. If a violation is noted, monitoring reverts to weekly. If the source reverts to weekly monitoring at any time, monitoring frequency will progress in an identical manner from the initial monitoring frequency. If the source has already performed the weekly and biweekly monitoring and is doing monitoring in compliance with a previous permit, the weekly and biweekly monitoring do not need to be repeated.

**Recordkeeping:**

- 1) The permittee shall maintain records of all observation results (see Attachment B), noting:
  - a) Whether any air emissions (except for water vapor) were visible from the emission units,
  - b) All emission units from which visible emissions occurred, and
  - c) Whether the visible emissions were normal for the process.
- 2) The permittee shall maintain records of any equipment malfunctions. (see Attachment C)
- 3) The permittee shall maintain records of any Method 9 test performed in accordance with this permit condition. (see Attachment D)
- 4) Attachments B, C, and D contain logs including these recordkeeping requirements. These logs, or an equivalent created by the permittee, must be used to certify compliance with this requirement.
- 5) These records shall be made available to the Missouri Department of Natural Resources' personnel upon request.
- 6) All records shall be maintained for five years.

**Reporting:**

- 1) The permittee shall report to the Air Pollution Control Program Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the permittee determined using the Method 9 test that the emission unit(s) exceeded the opacity limit.
- 2) Reports of any deviations from monitoring, recordkeeping and reporting requirements of this permit condition shall be submitted semiannually, in the semi-annual monitoring report and annual compliance certification, as required by Section V of this permit.

<b>EU0050 THROUGH EU0070 - BOILERS</b>			
<b>Emission Unit</b>	<b>Description</b>	<b>Manufacturer/Model #</b>	<b>2004 EIQ Reference #</b>
EU0050	Boiler #1, dry bottom, tangential-fired boiler; primary fuel - coal; start-up fuel - #2 fuel oil, petroleum coke, supplemental fuel – clean biomass such as switch grass; MHDR 1668 MMBtu/hr; equipped with dedicated electrostatic precipitator (ESP) to control PM ; installed 1958	Combustion Engineering	EP-06
EU0060	Boiler #2, dry bottom, tangential-fired boiler; primary fuel - coal; start-up fuel - #2 fuel oil, petroleum coke, supplemental fuel – clean biomass such as switch grass; MHDR 1668 MMBtu/hr; equipped with dedicated electrostatic precipitator (ESP) to control PM; exhausts to common stack with EU0070; installed 1960	Combustion Engineering	EP-07
EU0070	Boiler #3, dry bottom, tangential-fired boiler; primary fuel - coal; start-up fuel - #2 fuel oil, petroleum coke, used oil, supplemental fuel – clean biomass such as switch grass; MHDR 1640 MMBtu/hr; equipped with dedicated electrostatic precipitator (ESP) to control PM; exhausts to common stack with EU0060; installed 1964	Combustion Engineering	EP-08

**PERMIT CONDITION (EU0050 THROUGH EU0070)-001**

10 CSR 10-3.060 Maximum Allowable Emissions of Particulate Matter from Fuel Burning Equipment Used for Indirect Heating and 40 CFR Part 64 Compliance Assurance Monitoring

Note: Compliance Assurance Monitoring (CAM) applies to these units, so this permit condition incorporates parts of 40 CFR Part 64 and, through that, parts of 40 CFR Part 60. However, the Department of Natural Resources, Air Pollution Control Program, Compliance/Enforcement Section has approved a CAM plan and CAM test plan for these units. Where conflicts arise between these documents and 40 CFR Part 60, the CAM plan and CAM test plan govern. This will assure that where there is doubt, the acceptance criteria in the CAM plan and CAM test plan will be used, and not those in 40 CFR Part 60 Appendix B Performance Specification 11 (PS-11). These monitors are indicators of compliance, and not compliance monitors. The full PS-11 requirements do not apply to monitors that are only indicators of compliance.

**Emission Limitations:**

- 1) The permittee shall not emit particulate matter in excess of 0.20 lb/MMBtu.
- 2) This emission rate was calculated using the following equation:

For existing indirect heating sources:

$$E = 0.90(Q)^{-0.174}$$

Where:

E = the maximum allowable particulate emission rate in pounds per million Btu of heat input, rounded off to two decimal places; and

Q = the installation heat input in millions of Btu per hour (1668 MMBtu/hr + 1668 MMBtu/hr + 1640 MMBtu/hr = 4976 MMBtu/hr).

- 3) Per 40 CFR §60.8(c), emissions in excess of the level of the emission limit in 1) above during periods of startup, shutdown, and malfunction shall not be considered a violation.

**Monitoring:**

- 1) The permittee shall install, calibrate, maintain and operate a PM continuous emission monitoring system (CEMS) in each stack in order to provide a reasonable assurance of the performance of the electrostatic precipitators (ESPs) in accordance with §60.13 and Appendix B of 40 CFR Part 60.
- 2) Each PM CEMS shall be installed such that representative measurements of emissions are obtained and problems due to any detected flow disturbances or varying PM stratification are minimized. Prior to installation, measurements shall be made of flow dynamics and/or particulate matter to determine the existence or extent of PM stratification. Additional procedures for location of PM CEMS contained in Performance Specialization 11 (PS-11) of Appendix B to Part 60 shall be used.
- 3) All PM CEMS shall be installed and operational prior to conduction of any performance tests. The permittee shall perform verification procedures to confirm the operational status of the PM CEMS prior to the required monitoring start. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation and calibration of the device.
- 4) The permittee shall establish the indicator range as the hourly average PM CEMS reading covering the full range of measurements made during the initial calibration testing plus 25%. This indicator range shall be a calibrated instrument output and shall reflect reasonable assurance of the proper operation and maintenance of the electrostatic precipitators (ESPs).
- 5) Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and zero and span adjustments), each PM CEMS shall be in continuous operation and required sampling frequency shall be in accordance with §64.13(e)(2). Each PM CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.
- 6) Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for data averages and calculations, or fulfilling a minimum data availability requirement. The permittee shall use all the data collected during all other periods in assessing the operation of the ESPs and associated monitoring system.
- 7) The permittee shall reduce all data to one-hour averages. One-hour averages shall be computed from four or more data points equally spaced over each one-hour period.
- 8) Results shall be recorded on an automated Data Acquisition Handling System (DAHS) as follows:
  - a) Record the analog output of the PM CEMS;
  - b) Calculate emissions values, in lb/MMBtu, and according to the correlation(s) established during the PM CEMS calibration;
  - c) Store the hourly averages of the calculated emissions values;
  - d) Record the daily zero-span calibration results;
  - e) Initiate an alarm if any daily zero or span value exceeds the error limit of plus or minus 5%;
  - f) Exceedances - initiate an alarm if the hourly averaged PM CEMS emission value reaches or exceeds the lower of the following limits:
    - i) A value equivalent to 1.25 times the highest PM CEMS response value reached during the correlation tests, or
    - ii) A value equivalent to 0.9 times the source emission limit; and,
  - g) Initiate an alarm on the occurrence of a malfunction status indicator from the PM CEMS.
- 9) Upon detecting an exceedance, the permittee shall restore operation of EU0050 through EU0070 (including the ESPs and associated capture system) to their normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown or

malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Operational checks shall be made as soon as practicable and may include:

- a) ESP field checks (T/R voltage, current, spark rate);
- b) Visual inspection of control equipment;
- c) Unusual fuel characteristics; and,
- d) Boiler upset conditions.

10) Quality Assurance and Control Practices (QA/QC)

- a) Factory supplied filter standards will be used to calibrate the instruments at a reference zero and upscale span value. These calibration standards will be maintained in accordance with manufacturer's recommendations. Following the calibration an internal zero-span cycle will be initiated, thus establishing initial values for future reference.
- b) Daily zero-span cycles will be performed with the results stored in the data system and compared with the initial values.
- c) Should either the zero or span value error exceed plus or minus 5% of the starting value, an alarm will be initiated and the permittee shall recalibrate the instrument to the factory standards.
- d) A quarterly reference calibration will be performed as described in the instrument operations manual. The factory standards will be used to measure instrument response at a zero and upscale value. Should either of these readings exceed the factory standard by more than plus or minus 5% of the full-scale measurement range, the instrument will be reset to the factory standard values.
- e) Routine scheduled maintenance procedures will be established in accordance with manufacturer's recommendations.

11) If the accumulation of exceedances or excursions exceeds 5% of operating time for a reporting period, the permittee shall develop and implement a Quality Improvement Plan (QIP) as expeditiously as practicable. The plan initially shall include procedures for evaluating the control performance problems and, based on the results of the evaluation procedures, the permittee shall modify the plan to include procedures for conducting one or more of the following actions, as appropriate:

- a) Improved preventive maintenance practices;
- b) Process operation changes;
- c) Appropriate improvements to control methods;
- d) Other steps appropriate to correct control performance;
- e) More frequent or improved monitoring.

12) The permittee shall begin the monitoring required under this permit condition within 180 days after the approval of the Part 70 renewal operating permit.

13) The permittee shall maintain monitoring, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment, at all times.

**Testing:**

- 1) The instruments shall be calibrated based on the boiler load, coal, and ESPs characteristics and any other performance or test data deemed applicable by the permittee and/or director. Reference method measurements will be conducted in accordance with accepted method standards (EPA Methods 5 or 17) and compared with the integrated (arithmetic average) PM CEMS output over the reference method test period.

2) Correlation/Performance Testing

- a) The PM CEMS shall be initially operated for a period of approximately 30 days under various operating conditions to identify condition necessary to produce three target concentration levels for the correlation testing. During the 30 day pre-test monitoring period the following key operating parameters will be recorded on each stack:
  - i) Monitor output;
  - ii) Plant load;
  - iii) ESP voltage and current readings.
- b) A minimum of nine valid runs (e.g. 3 PM concentration loads and 3 tests per condition) will be used to obtain the correlation loads equation and correlation coefficient on each stack. A run will be declared “not valid” only when performed during a time when conditions are clearly not representative of normal operation, including periods of startup, shutdown and malfunction.
- c) The linear correlation equation, which gives the predicted PM concentration as a function of the monitors response will be calculated according to Equation 11-3 of Performance Specification 11 of Appendix B to Part 60. The linear correlation coefficient will be calculated according to Equation 11-14 of Performance Specification 11 of Appendix B to Part 60.
- d) Tests will be performed at three different PM concentration levels with a minimum of three tests at each level, if possible. Level 1 encompasses the range 0% to 50% of the maximum PM concentration available. Level 2 should range from 50% to 75% of the maximum concentration, and Level 3 should range from 75% to 100% of the maximum concentration. The source should be operated over the complete range of expected conditions, so as to assure that the data produced is representative. The data gathered during the 30-day pre-test monitoring period shall be used to produce the desired concentrations for the test runs of each stack.
- e) During correlation testing, the reference method data and PM CEMS measurements will be converted into units of pounds PM per MMBtu to establish limits comparable to the emission limitation of 0.20 lb PM/MMBtu. Once established, these limits will be converted into units of pounds PM per actual stack gas volume, or pounds of PM per megawatt. During operation after testing, the PM CEMS output and determination of PM levels with respect to limits, will be conducted only in units of pounds per actual stack gas volume or pounds PM per megawatt.
- f) The correlation coefficient (r) for each stack resulting from the calibration testing must be greater than or equal to 0.75.
- g) Once the correlation equation has been determined for each stack, it will be applied to the PM CEMS data collected by the Data Recorder.

**Recordkeeping:**

- 1) The permittee shall comply with the recordkeeping requirements specified in §70.6(a)(3)(ii) including records of required monitoring information that include the following:
  - a) The date, place, and time of sampling or measurements;
  - b) The date(s) analyses were performed;
  - c) If applicable, the company or entity that performed the analyses;
  - d) The analytical techniques or methods used;
  - e) The results of such analyses; and
  - f) The operating conditions as existing at the time of sampling or measurement;
- g) Retention of records of all required monitoring data and support information for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all required calibration and maintenance records and all original

strip-chart recordings for continuous monitoring instrumentation, and copies of all required reports (including any written Quality Improvement Plan (QIP)).

- 2) The permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, instead of paper provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements.
- 3) Following any exceedance, the permittee shall record that operations returned to normal without operator action, or any necessary follow-up actions to return operation to within the indicator range.
- 4) These records shall be made available immediately for inspection to the Department of Natural Resources' personnel upon request.

**Reporting:**

- 1) The permittee shall report to the Air Pollution Control Program Enforcement Section, P.O. Box 176, Jefferson City, MO 65102 no later than ten days after any deviations/exceedances of this permit condition.
- 2) Performance Testing
  - a) The permittee shall submit operating parameter data obtained during the conduct of any applicable compliance or performance tests.
  - b) The permittee shall submit documentation that no changes to the emission units, including the control device and capture system, have taken place that could result in a significant change in the control system performance or selected indicator ranges since the last performance or compliance test.
- 3) If the permittee identifies a failure to achieve compliance with the PM emissions limit for which the PM CEMS did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges, the permittee shall promptly notify the MDNR and, if necessary, submit a proposed modification to the Part 70 permit to address the necessary monitoring changes. Such a modification may include, but is not limited to, reestablishing indicator ranges, modifying the frequency of conducting monitoring and collecting data, or the monitoring of additional parameters.
- 4) The permittee shall submit quarterly monitoring reports certified by a responsible official. The monitoring report shall include, as a minimum, the following information, as applicable:
  - a) All instances of deviations from permit requirements must be clearly identified.
  - b) Prompt reporting of deviations from permit requirements, including those attributable to upset conditions, the probable cause of such deviations, and any corrective actions or preventive measures taken.
  - c) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;
  - d) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable); and
  - e) A description of the actions taken to implement a QIP during the reporting period as specified in §64.8. Upon completion of a QIP, the permittee shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

<p align="center"><b>PERMIT CONDITION (EU0050 THROUGH EU0070)-002</b> 10 CSR 10-6.220 Restriction of Emission of Visible Air Contaminants</p>
---

**Emission Limitations:**

- 1) No owner or other person shall cause or permit emissions to be discharged into the atmosphere from any existing source any visible emissions with an opacity greater than 40%.
- 2) Exception: A person may discharge into the atmosphere from any source of emissions for a period(s) aggregating not more than six (6) minutes in any 60 minutes air contaminants with an opacity up to 60%.

**Monitoring/Operational Requirements:**

- 1) A continuous opacity monitoring system shall be installed, calibrated, maintained, and operated in accordance with 40 CFR Part 60, Appendix B - Performance Specification 1.
- 2) COMS General Requirements
  - a) Source operating time includes any time fuel is being combusted and/or a fan is being operated.
  - b) Cycling times include the total time a monitoring system requires to sample, analyze and record an emission measurement. Continuous monitoring systems for measuring opacity shall complete a minimum of one cycle of operating (sampling and analyzing) for each successive ten-second period and one cycle of data recording for each successive six-minute period.
  - c) Each COMS shall be certified by the director of the Air Pollution Control Program after review and acceptance of a demonstration of conformance with 40 CFR Part 60, Appendix B - Performance Specification 1.
  - d) Each COMS shall be subject to audits conducted by the department, and all COMS records shall be made available upon request to department personnel.

**Recordkeeping:**

- 1) The permittee shall maintain a file (hard copy or electronic version) of the following information for a minimum of five years from the date the data was collected:
  - a) All information reported in the quarterly summaries including:
    - i) The charts or printouts generated by the COMS, where applicable;
    - ii) An opacity summary report;
    - iii) An excess opacity emission summary;
    - iv) An excess opacity emission summary list;
    - v) An opacity monitoring downtime summary list; and
  - b) All six-minute opacity averages and daily Quality Assurance (QA)/Quality Control (QC) records. This includes, but is not restricted to the daily monitoring system calibration check done on the continuous opacity monitoring system.
- 2) The permittee shall maintain records of any opacity monitoring equipment malfunctions.
- 3) The permittee shall maintain records of any Method 9 test performed in accordance with this permit condition. Attachment D or equivalent recordkeeping form shall be used to provide Method 9 Visual Observation log records.
- 4) These records shall be made available immediately for inspection to the Department of Natural Resources' personnel upon request. All records must be maintained for five years.



**Reporting:**

- 1) The permittee shall report to the Air Pollution Control Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after any deviations/exceedances of this permit condition.
- 2) The permittee shall submit a quarterly written report to the director of the Air Pollution Control Program. All quarterly reports shall be postmarked no later than the thirtieth day following the end of each calendar quarter and shall include the following emissions data:
  - a) A summary including total time for each cause of excess emissions and/or monitor downtime;
  - b) Nature and cause of excess emissions, if known;
  - c) The six-minute average opacity values greater than the opacity emission requirements (the average of the values shall be obtained by using the procedures specified in the Reference Method used to determine the opacity of the visible emissions);
  - d) The date and time identifying each period during which the COMS was inoperative (except for zero and span checks), including the nature and frequency of system repairs or adjustments that were made during these times; and
  - e) If no excess emissions have occurred during the reporting period and the COMS has not been inoperative, repaired or adjusted, this information shall be stated in the report.

**PERMIT CONDITION (EU0050 THROUGH EU0070)-003**

**10 CSR 10-6.260 Restriction of Emission of Sulfur Compounds**

Note: Table 1 in 10 CSR 10-6.260 in the Missouri State Implementation Plan (SIP) and the related September 30, 1988 state consent agreement with Kansas City Power & Light (KCP&L) specified an emission limitation of 12.9 lb SO<sub>2</sub>/MMBtu averaged over three hours. In the 8/31/05 revision to 10 CSR 10-6.260, Missouri DNR, with KCP&L's agreement, changed this to 1.3 lb SO<sub>2</sub>/MMBtu averaged over a year. The United States Environmental Protection Agency (EPA) disapproved this on October 3, 2005. Therefore, at the time of this permit's issuance, the prior requirement of 12.9 lb SO<sub>2</sub>/MMBtu averaged over three hours remains federally enforceable, while the changed requirement of 1.3 lb lb SO<sub>2</sub>/MMBtu averaged over a year is state enforceable. The EPA, Missouri DNR, and KCP&L have all agreed to change the SIP and consent agreement to 3.9 lb SO<sub>2</sub>/MMBtu, averaged over a midnight-to-midnight twenty-four-hour time period. When this new requirement (c) goes into effect, it will become the only requirement, and the previous two requirements (a) and (b) will no longer be enforceable and should be considered dropped from this permit.

**Emission Limitations: \***

- 1) Kansas City Power & Light Company - Montrose Generating Station shall limit their average sulfur dioxide (SO<sub>2</sub>) emissions per million Btus actual heat input into the atmosphere to:
  - a) 12.9 pounds in any consecutive three (3)-hour period until Table 1 in 10 CSR 20-6.260 in the Missouri State Implementation Plan is modified;
  - b) 1.3 pounds annually until Table 1 in 10 CSR 20-6.260 in the Missouri State Implementation Plan is modified; and
  - c) 3.9 pounds in any midnight-to-midnight twenty-four (24) time period thereafter.
- 2) No person shall cause or permit the emission of sulfur compounds from any source which causes or contributes to concentrations exceeding those specified in 10 CSR 10-6.010 Ambient Air Quality Standards.

Pollutant	Concentration by Volume	Remarks
Sulfur Dioxide (SO <sub>2</sub> )	0.03 parts per million (ppm) (80 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ))	Annual arithmetic mean
	0.14 ppm (365 $\mu\text{g}/\text{m}^3$ )	24-hour average not to be exceeded more than once per year
	0.5 ppm (1300 $\mu\text{g}/\text{m}^3$ )	3-hour average not to be exceeded more than once per year
Hydrogen Sulfide (H <sub>2</sub> S)	0.05 ppm (70 $\mu\text{g}/\text{m}^3$ )	½-hour average not to be exceeded over 2 times per year
	0.03 ppm (42 $\mu\text{g}/\text{m}^3$ )	½-hour average not to be exceeded over 2 times in any 5 consecutive days
Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	10 $\mu\text{g}/\text{m}^3$	24-hour average not to be exceeded more than once in any 90 consecutive days
	30 $\mu\text{g}/\text{m}^3$	1-hour average not to be exceeded more than once in any 2 consecutive days

**Monitoring:**

- 1) The permittee shall maintain and operate a continuous emission monitoring system (CEMS) in accordance with all the requirements of 40 CFR Part 75 to monitor SO<sub>2</sub> emissions. Results shall be recorded on an automated Data Acquisition Handling System (DAHS).
- 2) The permittee shall ensure that each CEMS meets the equipment, installation, and performance specifications in Appendix A to 40 CFR Part 75; and is maintained according to the quality assurance and quality control procedures in Appendix B to 40 CFR Part 75.
- 3) The permittee shall ensure that all CEMS are in operation and monitoring unit emissions at all times that the affected unit, EU0050 through EU0070, combusts any fuel except during periods of calibration, quality assurance, or preventative maintenance, as well as, periods of repair, periods of backups of data from the DAHS or recertification.
- 4) The permittee shall ensure that each CEMS is capable of completing a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute interval. The permittee shall reduce all SO<sub>2</sub> emissions data to hourly averages. Hourly averages shall be computed using at least one data point in each fifteen minute quadrant of an hour, where the unit combusted fuel during that quadrant of an hour. Notwithstanding this requirement, an hourly average may be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour) if data are unavailable as a result of the performance of calibration, quality assurance, or preventive maintenance, or backups of data from the DAHS, or recertification. The permittee shall use all valid measurements or data points collected during an hour to calculate the hourly averages. All data points collected during an hour shall be, to the extent practicable, evenly spaced over the hour.
- 5) The permittee shall prepare and maintain a monitoring plan in accordance with §75.53. A monitoring plan shall contain sufficient information on the CEMS to demonstrate that all unit SO<sub>2</sub> emissions are monitored and reported.
- 6) Whenever the permittee makes a replacement, modification, or change in the certified CEMS, including a change in the automated DAHS or in the flue gas handling system, that affects information reported in the monitoring, then the permittee shall update the monitoring plan, by the applicable deadline specified in §75.62.

**Recordkeeping:**

- 1) The permittee shall maintain a file on-site of all measurements, data, reports, and other information required by §75.53, §75.57 and §75.59. Records include the following:
  - a) Total fuel consumed during the control period;
  - b) The total heat input for each emissions unit during the control period;
  - c) Reports of all stack testing conducted;
  - d) All other data collected by a CEMS necessary to convert the monitoring data to the units of the applicable emission limitation;
  - e) All performance evaluations conducted in the past year;
  - f) All monitoring device calibration checks;
  - g) All monitoring system, monitoring device and performance testing measurements;
  - h) Records of adjustments and maintenance performed on monitoring systems and devices; and
  - i) A log identifying each period during which the CEMS or alternate procedure was inoperative, except for zero and span checks, and the nature of the repairs and adjustments performed to make the system operative.
- 2) All records shall be kept in a form suitable for inspection for at least five years and be made available immediately to the Department of Natural Resources' personnel upon request.

**Reporting:**

- 1) The permittee shall submit all quarterly reports required by 40 CFR Part 75. The permittee shall submit these reports to the Environmental Protection Agency (EPA) by direct computer-to-computer electronic transfer via EPA-provided software. These reports are due within 30 days after the end of each calendar quarter. The quarterly reports must include the following essential information:
  - a) Facility information in accordance with §75.64(a)(1);
  - b) Hourly and cumulative emissions data;
  - c) Hourly unit operating information (e.g., load, heat input rate, operating time, etc.);
  - d) Monitoring plan information;
  - e) Results of required quality assurance tests (e.g., daily calibrations, linearity checks, RATAs, etc.); and
  - f) Certification statements from the Designated Representative or Authorized Account Representative (or the Alternate Representative), attesting to the completeness and accuracy of the data.
- 2) The permittee shall submit the electronic quarterly reports only to the EPA, not to the Missouri Department of Natural Resources. However, the permittee shall report to the Air Pollution Control Program Enforcement Section, P.O. Box 176, Jefferson City, MO 65102 no later than ten days after any deviation from the monitoring or reporting requirements of this permit condition.

**PERMIT CONDITION (EU0050 THROUGH EU0070)-004**

10 CSR 10-6.270 Acid Rain Source Permits Required

**Emission Limitation:**

The permittee shall obtain an Acid Rain Source Permit for EU0050 through EU0070 pursuant to Title IV of the Clean Air Act.

A Phase II permit (Missouri Department of Natural Resources project 1998-09-049, ORIS Code 2080) was issued to the permittee on January 22, 1999, with effective dates from January 1, 2000 to December 31, 2004. Sulfur dioxide (SO<sub>2</sub>) limitations are referenced in this existing Title IV: Phase II Acid Rain Permit for the installation. The permittee submitted a renewal application on September 4, 2004, under 10 CSR 10-6.270, "Acid Rain Source Permits Required." No changes to the installation's status were reflected in this renewal application.

**Monitoring/Recordkeeping:**

The permittee shall retain the most current acid rain permit issued to this installation on-site and shall immediately make such permit available to any Missouri Department of Natural Resources' personnel upon request.

**Reporting:**

Annual Compliance Certification

<p align="center"><b>PERMIT CONDITION (EU0050 THROUGH EU0070)-005</b> 10 CSR 10-6.350 Emission Limitations and Emissions Trading of Oxides of Nitrogen</p>
--

**Emission Limitations:**

- 1) The permittee shall limit emissions of NO<sub>x</sub> to the rate of 0.35 lbs. NO<sub>x</sub> /million British thermal units (MMBtu) of heat input during the control period (the period beginning May 1 of a calendar year and ending on September 30 of the same calendar year.)
- 2) In lieu of complying with the above emission limit, the permittee may comply through the NO<sub>x</sub> emissions trading program under 10 CSR 10-6.350(3)(B).
  - a) Compliance with this rule shall not relieve the permittee of the responsibility to comply fully with applicable provisions of the Air Conservation Law and rules or any other requirements under local, state or federal law. Specifically, compliance with 10 CSR 10-6.350 shall not violate the permit conditions previously established under 10 CSR 10-6.060 or 10 CSR 10-6.065.

**Monitoring:**

- 1) Compliance shall be measured during the control period.
- 2) All valid data shall be used for calculating NO<sub>x</sub> emissions rates.
- 3) Any coal-affected unit shall install, certify, operate, maintain, and quality assure a NO<sub>x</sub> and diluent CEMS pursuant to the requirements in 40 CFR Part 75;

**Recordkeeping:**

- 1) The permittee shall maintain records of the following:
  - a) Total fuel consumed during the control period;
  - b) The total heat input for each emissions unit during the control period;
  - c) Reports of all stack testing conducted to meet the requirements of this rule;
  - d) All other data collected by a CEMS necessary to convert the monitoring data to the units of the applicable emission limitation;
  - e) All performance evaluations conducted in the past year;
  - f) All monitoring device calibration checks;
  - g) All monitoring system, monitoring device and performance testing measurements;
  - h) Records of adjustments and maintenance performed on monitoring systems and devices; and
  - i) A log identifying each period during which the CEMS or alternate procedure was inoperative, except for zero and span checks, and the nature of the repairs and adjustments performed to make the system operative.
- 2) All records must be kept on-site for a period of five years and made available to the department upon request.

**Reporting:**

- 1) A compliance certification report for each affected unit shall be submitted to the department by October 31 following each control period. The report shall include:
  - a) The owner and operator;
  - b) The NO<sub>x</sub> authorized account representative;
  - c) NO<sub>x</sub> unit name, compliance and overdraft account numbers;
  - d) NO<sub>x</sub> emission rate limitation (lb/MMBtu);
  - e) Actual NO<sub>x</sub> emission rate (lb/MMBtu) for the control period;

- f) Actual heat input (MMBtu) for the control period. The unit's total heat input for the control period in each year will be determined in accordance with the test methods and monitoring requirements;
- g) Actual NO<sub>x</sub> mass emissions (tons) for the control period.
- 2) The NO<sub>x</sub> authorized account representatives seeking the recording of a NO<sub>x</sub> allowance transfer shall submit the transfer request to the director. To be considered correctly submitted, the NO<sub>x</sub> allowance transfer shall include the following elements in a format specified by the director:
  - a) The numbers identifying both the transferor and transferee accounts;
  - b) A specification by serial number of each NO<sub>x</sub> allowance to be transferred; and
  - c) The printed name and signature of the NO<sub>x</sub> authorized account representative of the transferor account and the date signed.
- 3) Any unit with valid CEMS data for the control period must use that data to determine compliance with the provisions of 10 CSR 10-6.350.
- 4) The permittee shall report any deviations/exceedances of this permit condition using the semi-annual monitoring report and annual compliance certification to the Air Pollution Control Program Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, as required by 10 CSR 10-6.065(6)(C)1.C.(III).

EU0080 AND EU0090 – EMERGENCY EQUIPMENT			
Emission Unit	Description	Manufacturer/Model #	2004 EIQ Reference #
EU0080	Internal combustion engine; diesel fired, MHDR 1.01 MMBtu/hr (400 HP); installed 1993	NA	NA
EU0090	Emergency generator rated at 180 KVA; powered by 250 HP (1.75 MMBtu) internal combustion engine; diesel powered; installed 1999	Generator - Kohler, IC Engine - John Deere/180ROZJ	NA

**PERMIT CONDITION (EU0080 AND EU0090)-001**

10 CSR 10-6.260 Restriction of Emission of Sulfur Compounds

**Emission Limitations:**

- 1) Emissions from EU0080 and EU0090 shall not contain more than five hundred parts per million by volume (500 ppmv) of sulfur dioxide.
- 2) Stack gasses shall not contain more than thirty-five milligrams (35 mg) per cubic meter of sulfuric acid or sulfur trioxide or any combination of those gases averaged on any consecutive three hour time period.
- 3) No person shall cause or permit the emission of sulfur compounds from any source which causes or contributes to concentrations exceeding those specified in 10 CSR 10-6.010 Ambient Air Quality Standards.

Pollutant	Concentration by Volume	Remarks
Sulfur Dioxide (SO <sub>2</sub> ) *	0.03 parts per million (ppm) (80 micrograms per cubic meter (μg/m <sup>3</sup> ))	Annual arithmetic mean
	0.14 ppm (365 μg/ m <sup>3</sup> )	24-hour average not to be exceeded more than once per year
	0.5 ppm (1300 μg/ m <sup>3</sup> )	3-hour average not to be exceeded more than once per year
Hydrogen Sulfide (H <sub>2</sub> S)	0.05 ppm (70 μg/ m <sup>3</sup> )	½-hour average not to be exceeded over 2 times per year
	0.03 ppm (42 μg/ m <sup>3</sup> )	½-hour average not to be exceeded over 2 times in any 5 consecutive days
Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	10 μg/ m <sup>3</sup>	24-hour average not to be exceeded more than once in any 90 consecutive days
	30 μg/ m <sup>3</sup>	1-hour average not to be exceeded more than once in any 2 consecutive days

**Monitoring/Recordkeeping/Reporting:**

The permittee will always be in compliance with this regulation. Calculations demonstrating compliance are in Attachment E. The permittee shall keep this attachment with this permit. No monitoring or reporting is required for this permit condition.

## IV. Core Permit Requirements

The installation shall comply with each of the following requirements. Consult the appropriate sections in the Code of Federal Regulations (CFR) and Code of State Regulations (CSR) for the full text of the applicable requirements. All citations, unless otherwise noted, are to the regulations in effect as of the date that this permit is issued.

### **10 CSR 10-6.050 Start-up, Shutdown and Malfunction Conditions**

- 1) In the event of a malfunction, which results in excess emissions that exceed one hour, the permittee shall submit to the director within two business days, in writing, the following information:
  - a) Name and location of installation;
  - b) Name and telephone number of person responsible for the installation;
  - c) Name of the person who first discovered the malfunction and precise time and date that the malfunction was discovered.
  - d) Identity of the equipment causing the excess emissions;
  - e) Time and duration of the period of excess emissions;
  - f) Cause of the excess emissions;
  - g) Air pollutants involved;
  - h) Best estimate of the magnitude of the excess emissions expressed in the units of the applicable requirement and the operating data and calculations used in estimating the magnitude;
  - i) Measures taken to mitigate the extent and duration of the excess emissions; and
  - j) Measures taken to remedy the situation that caused the excess emissions and the measures taken or planned to prevent the recurrence of these situations.
- 2) The permittee shall submit the paragraph 1 information list to the director in writing at least ten days prior to any maintenance, start-up or shutdown, which is expected to cause an excessive release of emissions that exceed one hour. If notice of the event cannot be given ten days prior to the planned occurrence, it shall be given as soon as practicable prior to the release. If an unplanned excess release of emissions exceeding one hour occurs during maintenance, start-up or shutdown, the director shall be notified verbally or by facsimile machine (fax) transmission as soon as practical during normal working hours and no later than the close of business of the following working day. If notice is given verbally, then a written notice shall follow within ten working days. If notice is given by fax and this fax contains all the relevant information, then the permittee need not submit written notice, but shall maintain a copy of the material submitted by fax and documentation that the fax transmission was successful
- 3) Upon receipt of a notice of excess emissions issued by an agency holding a certificate of authority under section 643.140, RSMo, the permittee may provide information showing that the excess emissions were the consequence of a malfunction, start-up or shutdown. The information, at a minimum, should be the paragraph 1 list and shall be submitted not later than 15 days after receipt of the notice of excess emissions. Based upon information submitted by the permittee or any other pertinent information available, the director or the commission shall make a determination whether the excess emissions constitute a malfunction, start-up or shutdown and whether the nature, extent and duration of the excess emissions warrant enforcement action under section 643.080 or 643.151, RSMo.
- 4) Nothing in this rule shall be construed to limit the authority of the director or commission to take appropriate action, under sections 643.080, 643.090 and 643.151, RSMo to enforce the provisions of the Air Conservation Law and the corresponding rule.



- 5) Compliance with this rule does not automatically absolve the permittee of liability for the excess emissions reported.

#### **10 CSR 10-6.060 Construction Permits Required**

The permittee shall not commence construction, modification, or major modification of any installation subject to this rule, begin operation after that construction, modification, or major modification, or begin operation of any installation which has been shut down longer than five years without first obtaining a permit from the permitting authority.

#### **10 CSR 10-6.065 Operating Permits**

The permittee shall file a complete application for renewal of this operating permit at least six months before the date of permit expiration. In no event shall this time be greater than eighteen months. [10 CSR 10-6.065(6)(B)1.A(V)] The permittee shall retain the most current operating permit issued to this installation on-site. [10 CSR 10-6.065(6)(C)1.C(II)] The permittee shall immediately make such permit available to any Missouri Department of Natural Resources personnel upon request. [10 CSR 10-6.065(6)(C)3.B]

#### **10 CSR 10-6.110 Submission of Emission Data, Emission Fees and Process Information**

- 1) The permittee shall complete and submit an Emission Inventory Questionnaire (EIQ) in accordance with the requirements outlined in this rule.
- 2) The permittee shall pay an annual emission fee per ton of regulated air pollutant emitted according to the schedule in the rule. This fee is an emission fee assessed under authority of RSMo. 643.079 to satisfy the requirements of the Federal Clean Air Act, Title V.
- 3) The fees shall be due April 1 each year for emissions produced during the previous calendar year. The fees shall be payable to the Department of Natural Resources and shall be accompanied by the Emissions Inventory Questionnaire (EIQ) form or equivalent approved by the director.

#### **10 CSR 10-6.130 Controlling Emissions During Episodes of High Air Pollution Potential**

This rule specifies the conditions that establish an air pollution alert (yellow/orange/red/purple), or emergency (maroon) and the associated procedures and emission reduction objectives for dealing with each. The permittee shall submit an appropriate emergency plan if required by the Director.

#### **10 CSR 10-6.150 Circumvention**

The permittee shall not cause or permit the installation or use of any device or any other means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission or air contaminant which violates a rule of the Missouri Air Conservation Commission.

#### **10 CSR 10-6.170 Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin**

- 1) The permittee shall not cause or allow to occur any handling, transporting or storing of any material; construction, repair, cleaning or demolition of a building or its appurtenances; construction or use of a road, driveway or open area; or operation of a commercial or industrial installation without applying reasonable measures as may be required to prevent, or in a manner which allows or may allow, fugitive particulate matter emissions to go beyond the premises of origin in quantities that the particulate matter may be found on surfaces beyond the property line of origin. The nature or origin of the particulate matter shall be determined to a reasonable degree of certainty by a technique proven to be accurate and approved by the director.

- 2) The permittee shall not cause nor allow to occur any fugitive particulate matter emissions to remain visible in the ambient air beyond the property line of origin.
- 3) Should it be determined that noncompliance has occurred, the director may require reasonable control measures as may be necessary. These measures may include, but are not limited to, the following:
  - a) Revision of procedures involving construction, repair, cleaning and demolition of buildings and their appurtenances that produce particulate matter emissions;
  - b) Paving or frequent cleaning of roads, driveways and parking lots;
  - c) Application of dust-free surfaces;
  - d) Application of water; and
  - e) Planting and maintenance of vegetative ground cover.

#### **10 CSR 10-6.180 Measurement of Emissions of Air Contaminants**

- 1) The director may require any person responsible for the source of emission of air contaminants to make or have made tests to determine the quantity or nature, or both, of emission of air contaminants from the source. The director may specify testing methods to be used in accordance with good professional practice. The director may observe the testing. All tests shall be performed by qualified personnel.
- 2) The director may conduct tests of emissions of air contaminants from any source. Upon request of the director, the person responsible for the source to be tested shall provide necessary ports in stacks or ducts and other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices as may be necessary for proper determination of the emission of air contaminants.
- 3) The director shall be given a copy of the test results in writing and signed by the person responsible for the tests.

#### **10 CSR 10-3.030 Open Burning Restrictions**

- 1) The permittee shall not conduct, cause, permit or allow a salvage operation, the disposal of trade wastes or burning of refuse by open burning.
- 2) Exception - Open burning of trade waste or vegetation may be permitted only when it can be shown that open burning is the only feasible method of disposal or an emergency exists which requires open burning.
- 3) Any person intending to engage in open burning shall file a request to do so with the director. The request shall include the following:
  - a) The name, address and telephone number of the person submitting the application; The type of business or activity involved; A description of the proposed equipment and operating practices, the type, quantity and composition of trade wastes and expected composition and amount of air contaminants to be released to the atmosphere where known;
  - b) The schedule of burning operations;
  - c) The exact location where open burning will be used to dispose of the trade wastes;
  - d) Reasons why no method other than open burning is feasible; and
  - e) Evidence that the proposed open burning has been approved by the fire control authority which has jurisdiction.
- 4) Upon approval of the open burning permit application by the director, the person may proceed with the operation under the terms of the open burning permit. Be aware that such approval shall not exempt Kansas City Power & Light – Montrose Generating Station from the provisions of any other law, ordinance or regulation.

- 5) The permittee shall maintain files with letters from the director approving the open burning operation and previous DNR inspection reports.

**10 CSR 10-3.090 Restriction of Emission of Odors**

No person may cause, permit or allow the emission of odorous matter in concentrations and frequencies or for durations that odor can be perceived when one volume of odorous air is diluted with seven volumes of odor-free air for two separate trials not less than 15 minutes apart within the period of one hour.

**This requirement is not federally enforceable.**

**Title VI – 40 CFR Part 82 Protection of Stratospheric Ozone**

- 1) The permittee shall comply with the standards for labeling of products using ozone-depleting substances pursuant to 40 CFR Part 82, Subpart E:
  - a) All containers in which a class I or class II substance is stored or transported, all products containing a class I substance, and all products directly manufactured with a class I substance must bear the required warning statement if it is being introduced into interstate commerce pursuant to §82.106.
  - b) The placement of the required warning statement must comply with the requirements pursuant to §82.108.
  - c) The form of the label bearing the required warning statement must comply with the requirements pursuant to §82.110.
  - d) No person may modify, remove, or interfere with the required warning statement except as described in §82.112.
- 2) The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F, except as provided for motor vehicle air conditioners (MVACs) in Subpart B:
  - a) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to §82.156.
  - b) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to §82.158.
  - c) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to §82.161.
  - d) Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with recordkeeping requirements pursuant to §82.166. ("MVAC-like" appliance as defined at §82.152).
  - e) Persons owning commercial or industrial process refrigeration equipment must comply with the leak repair requirements pursuant to §82.156.
  - f) Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to §82.166.
- 3) If the permittee manufactures, transforms, imports, or exports a class I or class II substance, the permittee is subject to all the requirements as specified in 40 CFR Part 82, Subpart A, Production and Consumption Controls.
- 4) If the permittee performs a service on motor (fleet) vehicles when this service involves ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been

completed. The term "MVAC" as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or system used on passenger buses using HCFC-22 refrigerant.

The permittee shall be allowed to switch from any ozone-depleting substance to any alternative that is listed in the Significant New Alternatives Program (SNAP) promulgated pursuant to 40 CFR Part 82, Subpart G, Significant New Alternatives Policy Program. *Federal Only - 40 CFR Part 82*

<b>10 CSR 10-6.280 Compliance Monitoring Usage</b>
--

- 1) The permittee is not prohibited from using the following in addition to any specified compliance methods for the purpose of submission of compliance certificates:
  - a) Monitoring methods outlined in 40 CFR Part 64;
  - b) Monitoring method(s) approved for the permittee pursuant to 10 CSR 10-6.065, "Operating Permits", and incorporated into an operating permit; and
  - c) Any other monitoring methods approved by the director.
- 2) Any credible evidence may be used for the purpose of establishing whether a permittee has violated or is in violation of any such plan or other applicable requirement. Information from the use of the following methods is presumptively credible evidence of whether a violation has occurred by a permittee:
  - a) Monitoring methods outlined in 40 CFR Part 64;
  - b) A monitoring method approved for the permittee pursuant to 10 CSR 10-6.065, "Operating Permits", and incorporated into an operating permit; and
  - c) Compliance test methods specified in the rule cited as the authority for the emission limitations.
- 3) The following testing, monitoring or information gathering methods are presumptively credible testing, monitoring, or information gathering methods:
  - a) Applicable monitoring or testing methods, cited in:
    - i) 10 CSR 10-6.030, "Sampling Methods for Air Pollution Sources";
    - ii) 10 CSR 10-6.040, "Reference Methods";
    - iii) 10 CSR 10-6.070, "New Source Performance Standards";
    - iv) 10 CSR 10-6.080, "Emission Standards for Hazardous Air Pollutants"; or
  - b) Other testing, monitoring, or information gathering methods, if approved by the director, that produce information comparable to that produced by any method listed above.

## V. General Permit Requirements

The installation shall comply with each of the following requirements. Consult the appropriate sections in the Code of Federal Regulations (CFR) and Code of State Regulations (CSR) for the full text of the applicable requirements. All citations, unless otherwise noted, are to the regulations in effect as of the date that this permit is issued,

### 10 CSR 10-6.065(6)(C)1.B Permit Duration

This permit is issued for a term of five years, commencing on the date of issuance. This permit will expire at the end of this period unless renewed.

### 10 CSR 10-6.065(6)(C)1.C General Recordkeeping and Reporting Requirements

- 1) Recordkeeping
  - a) All required monitoring data and support information shall be retained for a period of at least five years from the date of the monitoring sample, measurement, report or application.
  - b) Copies of all current operating and construction permits issued to this installation shall be kept on-site for as long as the permits are in effect. Copies of these permits shall be made immediately available to any Missouri Department of Natural Resources' personnel upon request.
- 2) Reporting
  - a) All reports shall be submitted to the Air Pollution Control Program, Enforcement Section, P. O. Box 176, Jefferson City, MO 65102.
  - b) The permittee shall submit a report of all required monitoring by:
    - i) October 1st for monitoring which covers the January through June time period, and
    - ii) April 1st for monitoring which covers the July through December time period.
    - iii) Exception. Monitoring requirements which require reporting more frequently than semi annually shall report no later than 30 days after the end of the calendar quarter in which the measurements were taken.
  - c) Each report shall identify any deviations from emission limitations, monitoring, recordkeeping, reporting, or any other requirements of the permit; this includes deviations or Part 64 exceedances.
  - d) Submit supplemental reports as required or as needed. Supplemental reports are required no later than ten days after any exceedance of any applicable rule, regulation or other restriction. All reports of deviations shall identify the cause or probable cause of the deviations and any corrective actions or preventative measures taken.
    - i) Notice of any deviation resulting from an emergency (or upset) condition as defined in paragraph (6)(C)7.A of 10 CSR 10-6.065 (Emergency Provisions) shall be submitted to the permitting authority either verbally or in writing within two working days after the date on which the emission limitation is exceeded due to the emergency, if the permittee wishes to assert an affirmative defense. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that indicate an emergency occurred and the permittee can identify the cause(s) of the emergency. The permitted installation must show that it was operated properly at the time and that during the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or requirements in the permit. The notice must contain a description of the emergency, the steps taken to mitigate emissions, and the corrective actions taken.

- ii) Any deviation that poses an imminent and substantial danger to public health, safety or the environment shall be reported as soon as practicable.
- iii) Any other deviations identified in the permit as requiring more frequent reporting than the permittee's semiannual report shall be reported on the schedule specified in this permit, and no later than ten days after any exceedance of any applicable rule, regulation, or other restriction.
- e) Every report submitted shall be certified by the responsible official, except that, if a report of a deviation must be submitted within ten days after the deviation, the report may be submitted without a certification if the report is resubmitted with an appropriate certification within ten days after that, together with any corrected or supplemental information required concerning the deviation.
- f) The permittee may request confidential treatment of information submitted in any report of deviation.

#### **10 CSR 10-6.065(6)(C)1.D Risk Management Plan Under Section 112(r)**

The permittee shall comply with the requirements of 40 CFR Part 68, Accidental Release Prevention Requirements. If the permittee has more than a threshold quantity of a regulated substance in process, as determined by 40 CFR Section 68.115, the permittee shall submit a Risk Management Plan in accordance with 40 CFR Part 68 no later than the latest of the following dates:

- 1) June 21, 1999;
- 2) Three years after the date on which a regulated substance is first listed under 40 CFR Section 68.130; or
- 3) The date on which a regulated substance is first present above a threshold quantity in a process.

#### **10 CSR 10-6.065(6)(C)1.F Severability Clause**

In the event of a successful challenge to any part of this permit, all uncontested permit conditions shall continue to be in force. All terms and conditions of this permit remain in effect pending any administrative or judicial challenge to any portion of the permit. If any provision of this permit is invalidated, the permittee shall comply with all other provisions of the permit.

#### **10 CSR 10-6.065(6)(C)1.G General Requirements**

- 1) The permittee must comply with all of the terms and conditions of this permit. Any noncompliance with a permit condition constitutes a violation and is grounds for enforcement action, permit termination, permit revocation and re-issuance, permit modification or denial of a permit renewal application.
- 2) The permittee may not use as a defense in an enforcement action that it would have been necessary for the permittee to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit
- 3) The permit may be modified, revoked, reopened, reissued or terminated for cause. Except as provided for minor permit modifications, the filing of an application or request for a permit modification, revocation and reissuance, or termination, or the filing of a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- 4) This permit does not convey any property rights of any sort, nor grant any exclusive privilege.
- 5) The permittee shall furnish to the Air Pollution Control Program, upon receipt of a written request and within a reasonable time, any information that the Air Pollution Control Program reasonably may require to determine whether cause exists for modifying, reopening, reissuing or revoking the permit or to determine compliance with the permit. Upon request, the permittee also shall furnish to

the Air Pollution Control Program copies of records required to be kept by the permittee. The permittee may make a claim of confidentiality for any information or records submitted pursuant to 10 CSR 10-6.065(6)(C)1.

**10 CSR 10-6.065(5)(C)1.H Incentive Programs Not Requiring Permit Revisions**

No permit revision will be required for any installation changes made under any approved economic incentive, marketable permit, emissions trading, or other similar programs or processes provided for in this permit.

**10 CSR 10-6.065(5)(C)1.I.C Reasonably Anticipated Operating Scenarios**

None.

**10 CSR 10-6.065(5)(C)1.I.E Title IV Allowances**

This permit shall prohibit emissions which exceed any allowances the installation holds under Title IV of the Clean Air Act.

- 1) No permit revisions shall be required for increases in emissions that are authorized by allowances acquired pursuant to the acid rain program if the increases do not require a permit revision under any other applicable requirement.
- 2) Limits cannot be placed on the number of allowances that may be held by an installation. The installation may not use these allowances, however, as a defense for noncompliance with any other applicable requirement.
- 3) Any allowances held by a Title IV installation shall be accounted for according to procedures established in rules promulgated under Title IV of the Clean Air Act.
- 4) Kansas City Power and Light - Montrose Generating Station was issued a Title IV: Phase II Acid Rain Permit on January 22, 1999, with effective dates from January 1, 2000 through December 31, 2004. The Missouri Department of Natural Resources project number of this permit is 1998-09-049 and its ORIS code is 2080. Kansas City Power and Light – Montrose Generating Station applied for a renewal of this permit on September 4, 2004 which reflected no change in the installation's status.

**10 CSR 10-6.065(6)(C)3 Compliance Requirements**

- 1) Any document (including reports) required to be submitted under this permit shall contain a certification signed by the responsible official.
- 2) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized officials of the Missouri Department of Natural Resources, or their authorized agents, to perform the following (subject to the installation's right to seek confidential treatment of information submitted to, or obtained by, the Air Pollution Control Program):
  - a) Enter upon the premises where a permitted installation is located or an emissions-related activity is conducted, or where records must be kept under the conditions of this permit;
  - b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  - c) Inspect, at reasonable times and using reasonable safety practices, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
  - d) As authorized by the Missouri Air Conservation Law, Chapter 643, RSMo or the Act, sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the terms of this permit, and all applicable requirements as outlined in this permit.

- 3) All progress reports required under an applicable schedule of compliance shall be submitted semiannually (or more frequently if specified in the applicable requirement). These progress reports shall contain the following:
  - a) Dates for achieving the activities, milestones or compliance required in the schedule of compliance, and dates when these activities, milestones or compliance were achieved, and
  - b) An explanation of why any dates in the schedule of compliance were not or will not be met, and any preventative or corrective measures adopted.
- 4) The permittee shall submit an annual certification that it is in compliance with all of the federally enforceable terms and conditions contained in this permit, including emissions limitations, standards, or work practices. These certifications shall be submitted annually by April 1st, unless the applicable requirement specifies more frequent submission. These certifications shall be submitted to EPA Region VII, 901 North 5th Street, Kansas City, Kansas 66101, as well as the Air Pollution Control Program, Enforcement Section, P.O. Box 176, Jefferson City, MO 65102. All deviations and Part 64 exceedances and excursions must be included in the compliance certifications. The compliance certification shall include the following:
  - a) The identification of each term or condition of the permit that is the basis of the certification;
  - b) The current compliance status, as shown by monitoring data and other information reasonably available to the installation;
  - c) Whether compliance was continuous or intermittent;
  - d) The method(s) used for determining the compliance status of the installation, both currently and over the reporting period; and
  - e) Such other facts as the Air Pollution Control Program will require in order to determine the compliance status of this installation.

#### **10 CSR 10-6.065(6)(C)6 Permit Shield**

- 1) Compliance with the conditions of this permit shall be deemed compliance with all applicable requirements as of the date that this permit is issued, provided that:
  - a) The application requirements are included and specifically identified in this permit, or
  - b) The permitting authority, in acting on the permit revision or permit application, determines in writing that other requirements, as specifically identified in the permit, are not applicable to the installation, and this permit expressly includes that determination or a concise summary of it.
- 2) Be aware that there are exceptions to this permit protection. The permit shield does not affect the following:
  - a) The provisions of section 303 of the Act or section 643.090, RSMo concerning emergency orders,
  - b) Liability for any violation of an applicable requirement which occurred prior to, or was existing at, the time of permit issuance,
  - c) The applicable requirements of the acid rain program,
  - d) The authority of the Environmental Protection Agency and the Air Pollution Control Program of the Missouri Department of Natural Resources to obtain information, or
  - e) Any other permit or extra-permit provisions, terms or conditions expressly excluded from the permit shield provisions.

#### **10 CSR 10-6.065(6)(C)7 Emergency Provisions**

- 1) An emergency or upset as defined in 10 CSR 10-6.065(6)(C)7.A shall constitute an affirmative defense to an enforcement action brought for noncompliance with technology-based emissions



limitations. To establish an emergency- or upset-based defense, the permittee must demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence, the following:

- a) That an emergency or upset occurred and that the permittee can identify the source of the emergency or upset,
  - b) That the installation was being operated properly,
  - c) That the permittee took all reasonable steps to minimize emissions that exceeded technology-based emissions limitations or requirements in this permit, and
  - d) That the permittee submitted notice of the emergency to the Air Pollution Control Program within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and any corrective actions taken.
- 2) Be aware that an emergency or upset shall not include noncompliance caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

#### **10 CSR 10-6.065(6)(C)8 Operational Flexibility**

An installation that has been issued a Part 70 operating permit is not required to apply for or obtain a permit revision in order to make any of the changes to the permitted installation described below if the changes are not Title I modifications, the changes do not cause emissions to exceed emissions allowable under the permit, and the changes do not result in the emission of any air contaminant not previously emitted. The permittee shall notify the Air Pollution Control Program, Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, as well as EPA Region VII, 901 North 5th Street, Kansas City, Kansas 66101, at least seven days in advance of these changes, except as allowed for emergency or upset conditions. Emissions allowable under the permit means a federally enforceable permit term or condition determined at issuance to be required by an applicable requirement that establishes an emissions limit (including a work practice standard) or a federally enforceable emissions cap that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject.

- 1) Section 502(b)(10) changes. Changes that, under section 502(b)(10) of the Act, contravene an express permit term may be made without a permit revision, except for changes that would violate applicable requirements of the Act or contravene federally enforceable monitoring (including test methods), recordkeeping, reporting or compliance requirements of the permit.
  - a) Before making a change under this provision, The permittee shall provide advance written notice to the Air Pollution Control Program, Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, as well as EPA Region VII, 901 North 5th Street, Kansas City, Kansas 66101, describing the changes to be made, the date on which the change will occur, and any changes in emission and any permit terms and conditions that are affected. The permittee shall maintain a copy of the notice with the permit, and the APCP shall place a copy with the permit in the public file. Written notice shall be provided to the EPA and the APCP as above at least seven days before the change is to be made. If less than seven days notice is provided because of a need to respond more quickly to these unanticipated conditions, the permittee shall provide notice to the EPA and the APCP as soon as possible after learning of the need to make the change.
  - b) The permit shield shall not apply to these changes.

#### **10 CSR 10-6.065(6)(C)9 Off-Permit Changes**

- 1) Except as noted below, the permittee may make any change in its permitted operations, activities or emissions that is not addressed in, constrained by or prohibited by this permit without obtaining a permit revision. Insignificant activities listed in the application, but not otherwise addressed in or

prohibited by this permit, shall not be considered to be constrained by this permit for purposes of the off-permit provisions of this section. Off-permit changes shall be subject to the following requirements and restrictions:

- a) The change must meet all applicable requirements of the Act and may not violate any existing permit term or condition; the permittee may not change a permitted installation without a permit revision if this change is subject to any requirements under Title IV of the Act or is a Title I modification;
- b) The permittee must provide written notice of the change to the Air Pollution Control Program, Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, as well as EPA Region VII, 901 North 5th Street, Kansas City, Kansas 66101, no later than the next annual emissions report. This notice shall not be required for changes that are insignificant activities under 10 CSR 10-6.065(6)(B)3. This written notice shall describe each change, including the date, any change in emissions, pollutants emitted and any applicable requirement that would apply as a result of the change.
- c) The permittee shall keep a record describing all changes made at the installation that result in emissions of a regulated air pollutant subject to an applicable requirement and the emissions resulting from these changes; and
- d) The permit shield shall not apply to these changes.

#### **10 CSR 10-6.020(2)(R)12 Responsible Official**

The application utilized in the preparation of this permit was signed by James D. Teaney. On October 1, 2004, the Air Pollution Control Program was informed that Greg Lee, Plant Manager is now the responsible official. If this person terminates employment, or is reassigned different duties such that a different person becomes the responsible person to represent and bind the installation in environmental permitting affairs, the owner or operator of this air contaminant source shall notify the Director of the Air Pollution Control Program of the change. Said notification shall be in writing and shall be submitted within 30 days of the change. The notification shall include the name and title of the new person assigned by the source owner or operator to represent and bind the installation in environmental permitting affairs. All representations, agreement to terms and conditions and covenants made by the former responsible person that were used in the establishment of limiting permit conditions on this permit will continue to be binding on the installation until such time that a revision to this permit is obtained that would change said representations, agreements and covenants.

#### **10 CSR 10-6.065(6)(E)6 Reopening-Permit for Cause**

This permit may be reopened for cause if:

- 1) The Missouri Department of Natural Resources (MDNR) receives notice from the Environmental Protection Agency (EPA) that a petition for disapproval of a permit pursuant to 40 CFR §70.8(d) has been granted, provided that the reopening may be stayed pending judicial review of that determination,
- 2) MDNR or EPA determines that the permit contains a material mistake or that inaccurate statements were made which resulted in establishing the emissions limitation standards or other terms of the permit,
- 3) Additional applicable requirements under the Act become applicable to the installation; however, reopening on this ground is not required if—:
  - a) The permit has a remaining term of less than three years;
  - b) The effective date of the requirement is later than the date on which the permit is due to expire;or

- c) The additional applicable requirements are implemented in a general permit that is applicable to the installation and the installation receives authorization for coverage under that general permit,
- 4) The installation is an affected source under the acid rain program and additional requirements (including excess emissions requirements), become applicable to that source, provided that, upon approval by EPA, excess emissions offset plans shall be deemed to be incorporated into the permit; or
- 5) MDNR or EPA determines that the permit must be reopened and revised to assure compliance with applicable requirements.

<b>10 CSR 10-6.065(6)(E)1.C Statement of Basis</b>
--

This permit is accompanied by a statement setting forth the legal and factual basis for the draft permit conditions (including references to applicable statutory or regulatory provisions). This Statement of Basis, while referenced by the permit, is not an actual part of the permit.

## **VI. Attachments**

Attachments follow.

## ATTACHMENT A

### Production and Emissions Record

This recordkeeping sheet or an equivalent form may be used for the recordkeeping requirements of Permit Condition (EU0010 and EU0020)-001.

[illegible]

\*Emissions = (coal received in tons) X 0.00352 lb/ton ÷ 2,000 lb/ton. The 12-month total emissions must equal 14.9 tons, or less, to maintain compliance.

**ATTACHMENT B**  
**Method 22 (Outdoor) Observation Log**

This recordkeeping sheet or an equivalent form may be used for the recordkeeping requirements of 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*.

[illegible]

**ATTACHMENT C**  
**Inspection/Maintenance/Repair/Malfunction Log**

This recordkeeping sheet or an equivalent form may be used to record inspections of equipment, maintenance repairs and malfunctions.

[illegible]

**ATTACHMENT D**  
**Method 9 Opacity Emissions Observations**

This recordkeeping sheet or an equivalent form may be used for the recordkeeping requirements of 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*.

Method 9 Opacity Emissions Observations								
Company						Observer		
Location						Observer Certification Date		
Date						Emission Unit		
Time						Control Device		
Hour	Minute	Seconds				Steam Plume (check if applicable)		Comments
		0	15	30	45	Attached	Detached	
	0							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
SUMMARY OF AVERAGE OPACITY								
Set Number	Time				Opacity			
	Start	End			Sum		Average	

Readings ranged from \_\_\_\_\_ to \_\_\_\_\_ % opacity.

Was the emission unit in compliance at the time of evaluation? \_\_\_\_\_  
 YES NO Signature of Observer \_\_\_\_\_

**ATTACHMENT E**  
**10 CSR 10-6.260 Compliance Demonstration**

This attachment may be used to demonstrate that EU0080 Emergency Fire Pump Engine and EU0090 Emergency Generator are always in compliance with 10 CSR 10-6.260, *Restriction of Emission of Sulfur Compounds*

General Equation

ppmv SO<sub>2</sub> = SO<sub>2</sub> Emission Factor in lb/MMBtu X F Factor in MMBtu/wscf X Conversion Factor for lb/scf to ppm X Conversion Factor for ppmw to ppmv

- 1) SO<sub>2</sub> emission factor for diesel engines < 600 HP = 0.29 lb/MMBtu (From AP-42 Table 3.3-1)
- 2) The F factor is the ratio of gas volume of products of combustion to the heat content of the fuel. For fuel oil the F factor = 1 MMBtu / 10,320 wscf (From Part 60 Appendix A Method 19 Table 19-2)
- 3) Conversion factor for lb/scf to ppm = ppm / 1.660E-7 lb/scf (From Part 60 Appendix A Method 19 Table 19-1)
- 4) Conversion factor for ppmw to ppmv = (28.8 / Molecular Weight of SO<sub>2</sub>) ppmv / 1 ppmw = (28.8/64) ppmv / ppmw = 0.45 ppmv / ppmw (From AP-42 Appendix A)

Compliance Demonstration

$$ppmv\ SO_2 = \left( 0.29\ lb/MMBtu \right) \left( MMBtu/10,320\ ft^3 \right) \left( ppmw/1.667E^{-7}\ lb/scf \right) \left( 0.45\ ppmv/ppmw \right) = 76\ ppmv$$

76 ppmv SO<sub>2</sub> << 500 ppmv SO<sub>2</sub>, so EU0080 and EU0090 are always in compliance



## STATEMENT OF BASIS

### Permit Reference Documents

These documents were relied upon in the preparation of the operating permit. Because they are not incorporated by reference, they are not an official part of the operating permit.

- 1) Part 70 Renewal Operating Permit Application, received 06/23/04;
- 2) 2004 Emissions Inventory Questionnaire, received 03/31/05;
- 3) U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*; Volume I, Stationary Point and Area Sources, Fifth Edition (AP-42.)

### History and Notes on Emission Units Without Limitations

- 1) Bottom unloading from railcar (EP-01) has been removed from the installation.
- 2) Coal storage piles (EP-02), fly ash unloading to open storage pile (EP-12), and fly ash pile maintenance activities (EP-13) are fugitive sources, which do not emit regulated pollutants from a discrete stack or vent. They emit particulate matter directly into the ambient air, and do not have any type of capture/control devices. They are not subject to any specific rule except the installation wide requirement of 10 CSR 10-6.170, *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*. (See items 2 and 4 in Other Regulatory Determinations below.)
- 3) Coal crusher (EP-04) is not subject to any specific rule. (See item 5 in NSPS Applicability and items 2 and 4 in Other Regulatory Determinations below.) In any case, it is inoperable. The coal is still conveyed through the coal crusher house, but is not crushed.
- 4) One 1,000,000-gallon fuel oil storage tank installed pre 1970's (EP-05), two 40,000-gallon fuel oil storage tanks installed pre 1970's, one 10,000-gallon used oil tank, one 2,000-gallon split fuel oil/gasoline storage tank, one 400-gallon diesel tank, one 300-gallon diesel tank, one 250-gallon gasoline tank, and two 240-gallon gasoline tanks are not subject to any specific rule. (See NSPS Applicability below.)
- 5) Haul roads are fugitive sources, which do not emit regulated pollutants from a discrete stack or vent. They emit particulate matter directly into the ambient air, and do not have any type of capture/control devices. They are not subject to any specific rule except the installation wide requirement of 10 CSR 10-6.170, *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*. (See item 4 in Other Regulatory Determinations below.)
- 6) Painting, maintenance (EP-208), sand blasting, maintenance (EP-210) and portable pump, maintenance (EP-206) are plant maintenance and upkeep activities or repair or maintenance shop activities which are not conducted as part of the installation's primary business activity. They are activities not required to be listed in the operating permit application. Painting is done occasionally in a small shed, not a typical paint booth with filters, and has only fugitive emissions. Sand blasting is done with a small unit – the size of a rabbit cage – and has only minor emissions. The portable pump is used occasionally to clean up flooding.

- 7) Solvent parts cleaner/degreaser (EP-43, EP-61, and EP-205), backup engine for Tainter gate (0.5 MMBtu/hr) (EP-64), fly ash silo vents (EP-94, EP-95, EP-96, EP-105, and two others), and portable heating units (EP-207) qualify as insignificant activities.

**Applicable Requirements Included in the Operating Permit but Not in the Application or Previous Operating Permits**

In the operating permit application, the installation indicated they were not subject to the following regulation(s). However, in the review of the application, the agency has determined that the installation is subject to the following regulation(s) for the reasons stated.

None.

**Other Air Regulations Determined Not to Apply to the Operating Permit**

The Air Pollution Control Program (APCP) has determined the following requirements are not applicable to this installation at this time for the reasons stated.

- 1) 10 CSR 10-3.050, *Restriction of Particulate Matter from Industrial Processes*  
This rule was listed as applicable on the permit application. However, this rule was rescinded on March 20, 2001 and replaced by 10 CSR 10-6.400.
- 2) 10 CSR 10-3.080, *Restriction of Emission of Visible Air Contaminants*  
This rule was listed as applicable on the permit application. However, this rule was rescinded on May 30, 2000 and replaced by 10 CSR 10-6.220.
- 3) 10 CSR 10-6.080, *Emission Standards for Hazardous Air Pollutants*  
40 CFR Part 61 Subpart E, *National Emission Standard for Mercury*  
This rule was listed as applicable on the permit application, but is not applicable. See the paragraphs on NESHAP Applicability below.
- 4) 10 CSR 10-6.100, *Alternate Emission Limits*  
This rule is not applicable because the installation is in an ozone attainment area.

**Construction Permit Revisions**

The following revisions were made to construction permits for this installation.

- 1) Construction Permit 0296-004 authorized the construction of EU0010 Rotary Coal Car Dumper and EU0020 Rotary Coal Car Dumper Conveyor.
  - a) This permit indicated that 10 CSR 10-3.050, *Restriction of Emission of Particulate Matter From Industrial Processes*, was an applicable requirement. This rule was rescinded on March 30, 2001, and was replaced by 10 CSR 10-6.400, *Restriction of Emission of Particulate Matter From Industrial Processes*. This new regulation is not applicable because §(1)(B)(12) specifies that it does not apply to the conveying operations at a power plant.
  - b) This permit indicated that 10 CSR 10-3.080, *Restriction of Emission of Visible Air Contaminants*, was an applicable requirement. This rule was rescinded on May 30, 2000, and was replaced by 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*.
  - c) This permit indicated that 10 CSR 10-3.150, *Restriction of Emissions of Sulfur Compounds*, was an applicable requirement. This rule was rescinded on July 30, 1997 and was replaced by 10

CSR 10-6.260, *Restriction of Emission of Sulfur Compounds*. Neither the old nor the new regulation is applicable anyway. The only significant emission from coal unloading, storage, crushing, or screening is particulate matter, not sulfur. (See 11.9 *Western Surface Coal Mining* and 11.10 *Coal Cleaning* in AP-42.)

- 2) Construction Permit 0699-008 authorized the construction of EU0080 Emergency Generator.
  - a) This permit indicated that 10 CSR 10-3.080, *Restriction of Emission of Visible Air Contaminants*, was an applicable requirement. This rule was rescinded on May 30, 2000, and was replaced by 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*. This new regulation is not applicable because §(1)(A) specifies that it does not apply to internal combustion engines.

### NSPS Applicability

- 1) 40 CFR Part 60 Subpart D, *Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971*  
40 CFR Part 60 Subpart Da, *Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978*  
40 CFR Part 60 Subpart Db, *Standards of Performance for Industrial, Commercial, Institutional Steam Generating Units for Which Construction is Commenced After June 19, 1984*  
These regulations do not apply to this installation's boilers, because they were constructed in 1958, prior to the subparts' applicability dates.
- 2) 40 CFR Part 60 Subpart Dc, *Standards of Performance for Small Industrial, Commercial, Institutional Steam Generating Units*  
This regulation does not apply to this installation's boilers, because they each have a maximum design heat input capacity greater than 100 MMBtu/hr.
- 3) 40 CFR Part 60 Subpart K, *Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978*  
40 CFR Part 60 Subpart Ka, *Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984*  
These regulations apply to storage vessels with capacities greater than 40,000 gallons that are used to store petroleum liquids and were constructed, reconstructed, or modified after certain applicability dates. These regulations do not apply to the 1,000,000-gallon fuel oil storage tank (EP-05) or to the two 40,000,000-gallon fuel oil storage tanks, because they were installed prior to the subparts' applicability dates. These regulations do not apply to the other petroleum liquid storage tanks, because they do not have capacities that greater than 40,000 gallons.
- 4) 40 CFR Part 60 Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984*  
This regulation applies to storage vessels with capacities greater than or equal to 75 m<sup>3</sup> (about 19,800 gallons) that are used to store volatile organic liquids and were constructed after July 23,

1984. This regulation does not apply to the 1,000,000-gallon fuel oil storage tank (EP-05) or to the two 40,000-gallon fuel oil storage tanks, because they were installed prior to the subpart's applicability date. This regulation does not apply to the other petroleum liquid storage tanks, because they do not have capacities of at least 75 m<sup>3</sup>.

5) 40 CFR Part 60 Subpart Y, *Standards of Performance for Coal Preparation Plants*

This regulation applies to thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems constructed after October 24, 1974 at a coal preparation plant.

- a) The definition of "coal processing and conveying equipment" in this regulation is "machinery used to reduce the size of coal or to separate coal from refuse, and the equipment used to convey coal to or remove coal and refuse from the machinery." EU0010 Rotary Coal Car Dumper and EU0020 Rotary Coal Car Dumper Conveyor do not meet this definition, because the coal goes only to coal storage piles. Therefore this regulation does not apply to them.
- b) EU0030 Coal Transfer and Conveying and the coal crusher (EP-04) were constructed prior to October 24, 1974, the subpart's applicability date. Therefore this regulation does not apply to them. Furthermore, the coal crusher is now inoperable.

None of the other New Source Performance Standards (NSPS) apply to this installation.

### **MACT Applicability**

1) 40 CFR Part 63 Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

This regulation does not apply to EU0080, Emergency Fire Pump Engine or to EU0090, Emergency Generator, because they have ratings of less than 500 brake horsepower.

2) 40 CFR Part 63 Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters*

This subpart does not apply to the EU0050 through EU0070 Boilers, because they are fossil fuel-fired combustion units of more than 25 megawatts that serve as generators that produce electricity for sale.

3) 40 CFR Part 63 Subpart UUUUU, *National Emission Standards for Coal- and Oil- Fired Electric Utility Steam Generating Units*

Coal- and oil- fired electric utility steam generating units were removed from the section 112(c) list of regulated source categories on March 29, 2005.

None of the other Maximum Available Control Technology (MACT) regulations apply to this installation.

### **NESHAP Applicability**

- 1) 10 CSR 10-6.080, *Emission Standards for Hazardous Air Pollutants*  
40 CFR Part 61 Subpart E, *National Emission Standard for Mercury*

This rule is applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge. This installation does none of these things, so this rule is not applicable to it.

- 2) 10 CSR 10-6.080, *Emission Standards for Hazardous Air Pollutants*  
40 CFR Part 61 Subpart M, *National Emission Standard for Asbestos*  
10 CSR 10-6.250, *Asbestos Abatement Projects – Certification, Accreditation, and Business Exemption Requirements*

Missouri Air Conservation Law, 643.225 through 643.250, *Asbestos Abatement*

In the permit application and according to APCP records, there was no indication that any of these regulations apply to this installation. The installation is subject to these regulations if they undertake any projects that deal with or involve any asbestos containing materials. None of the installation's operating projects underway at the time of this review deal with or involve asbestos containing material. Therefore, the above regulations were not cited in the operating permit. If the installation should undertake any construction or demolition projects in the future that deal with or involve any asbestos containing materials, the installation must follow all of the applicable requirements of the above rules related to that specific project.

None of the other National Emission Standards for Hazardous Air Pollutants (NESHAP) apply to this installation.

### **CAM Applicability**

EU0050 through EU0070 Boilers meet the applicability criteria for 40 CFR Part 64, *Compliance Assurance Monitoring (CAM)*, because these units each have the uncontrolled potential to emit particulate matter above the major source threshold levels (as defined by Part 70) and utilize control devices (as defined by 40 CFR §64.1) to comply with 10 CSR 10-3.060.

The permittee submitted a Compliance Assurance Monitoring plan with the renewal permit application, and then submitted a replacement CAM plan on February 25, 2005. The replacement CAM plan was approved by the Missouri Department of Natural Resources, Air Pollution Control Program, Compliance/Enforcement Section. A copy of the relevant memos and the approved CAM plan are attached at the end of this Statement of Basis .

The permittee also submitted a CAM test plan schedule on May 22, 2006, and a CAM test plan on July 24, 2006. Both of these were approved by the Missouri Department of Natural Resources, Air Pollution Control Program, Compliance/Enforcement Section. Copies of these are also attached at the end of this Statement of Basis.

This accepted Compliance Assurance Monitoring has been incorporated into Permit Condition (EU0050-through EU0070)-001.

Where conflicts arise between 40 CFR Part 60 and the approved CAM plan and CAM test plan, the CAM plan and CAM test plan govern. This will assure that where there is doubt, the acceptance criteria in the CAM plan and CAM test plan will be used, and not those in 40 CFR Part 60 Appendix B Performance Specification 11 (PS-11). These monitors are indicators of compliance, and not compliance monitors. The full PS-11 requirements do not apply to monitors that are only indicators of compliance.

### Other Regulatory Determinations

1) 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*

Per §(1)(A), this regulation does not apply to the following emission units, because they are internal combustion engines.

- a) EU0080 Emergency Fire Pump Engine
- b) EU0090 Emergency Generator

2) 10 CSR 10-6.260, *Restriction of Emissions of Sulfur Compounds*

This regulation does not apply to the following emission units, because the only significant emission from coal unloading, storage, crushing, or screening is particulate matter. (See 11.9 Western Surface Coal Mining and 11.10 Coal Cleaning in AP-42.)

- a) EU0010 Rotary Coal Dumper
- b) EU0020 Rotary Coal Dumper Conveyor
- c) EU0030 Coal Transfer and Conveying
- d) Coal storage piles
- e) Coal crusher (inoperable)

This regulation does not apply to the following emission units, because the only significant emission from fly ash handling is particulate matter. (See 1.1 and 1.2 Coal Combustion in AP-42.)

- f) EU0040 Fly Ash Unloading to Trucks
- g) Fly ash unloading to open storage piles (EP-12)
- h) Fly ash pile maintenance activities (EP-13)

Note: In the 8/31/05 revision to 10 CSR 10-6.260, Missouri DNR decreased Kansas City Power & Light - Montrose Station's SO<sub>2</sub> emission rate limit from 12.9 lb/MMBtu to 1.3 lb/MMBtu and increased the averaging time from a three hour average to an annual average. These revisions to the Missouri's SIP were disapproved by the EPA on October 3, 2005. Therefore, the underlying state regulation prior to the state's revision remains as the federally enforceable requirement.

3) 10 CSR 10-6.360, *Control of NO<sub>x</sub> Emissions From Electric Generating Units and Non- Electric Generating Boilers*

This regulation is not applicable in Henry County.

4) 10 CSR 10-6.400, *Restriction of Emissions of Particulate Matter From Industrial Processes*

Per §(1)(B)(12), this regulation does not apply to the following emission units, because they are part of the grinding, crushing, and conveying operations at a power plant.

- a) EU0010 Rotary Coal Dumper
- b) EU0020 Rotary Coal Dumper Conveyor
- c) EU0030 Coal Transfer and Conveying
- d) Coal crusher (EP-04)

Per §(1)(B)(6), this regulation does not apply to the following emission unit, because it burns fuel for indirect heating.

- e) EU0050 through EU0070 Boilers

The only materials introduced into the following emission units which may cause an emission of particulate matter are their fuels. Per §(2)(A), liquids and gases used solely as fuels and air

introduced for the purposes of combustion are excluded from consideration. Therefore the process weight rate for these emission units is zero, and the regulation does not apply.

f) EU0080 Emergency Fire Pump Engine

g) EU0090 Emergency Generator

Per §(1)(B)(7), this regulation does not apply to the following emission units, because they have only fugitive emissions.

h) Coal storage piles (EP-02)

i) EU0040 Fly Ash Unloading to Trucks

j) Fly ash unloading to open storage piles (EP-12)

k) Fly ash pile maintenance activities (EP-13)

l) Haul roads (EP-14)

- 5) September 30, 1988 MDNR letter re: *Emissions banked from use by Kansas City Power & Light Under 10 CSR 10-6.060*, signed by Randy Raymond.

This letter established an annual SO<sub>2</sub> emission rate of 1.3 pound per million BTU heat input (1.3 lb/MMBtu) which is included in Permit Condition (EU0050 through EU0070)-003. In addition, the letter contained recordkeeping and reporting requirements. These requirements are redundant to those recordkeeping and reporting requirements contained in 40 CFR Part 75 and are therefore not listed separately in Permit Condition (EU0050 through EU0070)-003.

#### **Other Regulations Not Cited in the Operating Permit or the Above Statement of Basis**

Any regulation which is not specifically listed in either the Operating Permit or in the above Statement of Basis does not appear, based on this review, to be an applicable requirement for this installation for one or more of the following reasons:

- 1) The specific pollutant regulated by that rule is not emitted by the installation.
- 2) The installation is not in the source category regulated by that rule.
- 3) The installation is not in the county or specific area that is regulated under the authority of that rule.
- 4) The installation does not contain the type of emission unit which is regulated by that rule.
- 5) The rule is only for administrative purposes.

Should a later determination conclude that the installation is subject to one or more of the regulations cited in this Statement of Basis or other regulations which were not cited, the installation shall determine and demonstrate, to the APCP's satisfaction, the installation's compliance with that regulation(s). If the installation is not in compliance with a regulation which was not previously cited, the installation shall submit to the APCP a schedule for achieving compliance for that regulation(s).

#### **Copies of Information on Compliance Assurance Monitoring (CAM)**

The remaining pages of this Statement of Basis contain the following CAM-related information:

- 1) The one-page cover memo dated February 25, 2005, from Dan Haas to Compliance/Enforcement Section Chief Steven Feeler for the CAM plans for Iatan generating station and Montrose generating station [SB-9];
- 2) The eight-page CAM plan for Kansas City Power & Light's Montrose generating station. This is not the version of the CAM plan submitted with the memo in 1) above and included in the draft of this permit which was put on public notice. It is the revised version submitted with comments on February 3, 2006, during the public comment period. It differs from the earlier version in that it uses a Teledyne PM monitor instead of an ESC monitor, and in that it allows for the possibility of putting the monitors in either stacks or ducts [sB-10 through SB=17].

- 3) The one-page e-mail dated May 22, 2006, from Dan Haas in the Environmental Service Department of Kansas City Power & Light to Ken Volmert in the Compliance/Enforcement Section containing the CAM plan test schedule [SB-18]; and
- 4) The twenty-five-page CAM Test Plan (Quality Assurance & Quality Control) for Kansas City Power & Light's Montrose generating station, attached to an e-mail dated July 24, 2006, from Dan Haas in the Environmental Service Department of Kansas City Power & Light to Cheryl Steffan in the Permits Section and Ken Volmert in the Compliance/Enforcement Section [SB-19 through SB-43].



RECEIVED

2005 FEB 28 AM 10:30



# Kansas City Power & Light

February 25, 2005

Mr. Steven Feeler  
Compliance/Enforcement Section Chief  
Missouri Department of Natural Resources  
Air Pollution Control Program  
P. O. Box 176  
Jefferson City, MO 65102-0176

## Re: Compliance Assurance Monitoring Plans for Iatan Generating Station and Montrose Generating Station

Dear Mr. Feeler:

I am enclosing copies of the proposed Compliance Assurance Monitoring plans for Iatan and Montrose Generating Stations. These CAM plans are intended to replace the ones submitted with the original permit renewal applications submitted earlier.

The plans enclosed are based on the use of a continuous particulate monitor as an indicator of the electrostatic precipitators performance. The plans envision the use of Environmental Services Corporation's Model P-5B monitors, however, KCP&L reserves the right to replace this model with a comparable model if there are problems obtaining this particular model. Pursuant to 40 CFR 64.6 (d) a proposed schedule for the installation and testing of these plans should be included as part of the operating permits when issued, and it is KCP&L's understanding that the installation and testing should be completed within 180 days of permit issuance pursuant to 40 CFR 64.4 (e).

Please feel free to contact me directly with any comments or concerns. My phone number is 816-556-2998.

Sincerely,

Dan Haas

Environmental Service Department

Enclosures (2)

cc: K. Volmert (MoDNR)  
T. Eaton (KCP&L - Environmental Services)  
G. Brown (Iatan)  
D. Kelsay (Montrose)  
P. May (Environmental Services)

**COMPLIANCE ASSURANCE MONITORING PLAN**  
**Kansas City Power & Light Company's - Montrose Station**

**Background**

**Emission Unit:**

**Description:** Unit 1 - Combustion Engineering Tangential-Fired Boiler,  
1668 MMBtu/Hr.  
Unit 2 - Combustion Engineering Tangential-Fired Boiler,  
1668 MMBtu/Hr.  
Unit 3 - Combustion Engineering Tangential-Fired Boiler,  
1640 MMBtu/Hr.  
(Unit 2 and 3 exhaust through a common stack)

**Facility:** Montrose Generating Station  
400 SW Highway P  
Clinton, Missouri 64735

**Applicable Requirement:**

**Regulation:** 10 CSR 10-3.060, Maximum Allowable Emission of  
Particulate Matter From Fuel Burning Equipment Used for  
Indirect Heating

**Pollutants:** Particulate Matter (PM)

**Emission Limit:** 0.20 Lb PM per MMBtu on a station-wide average basis,  
except during periods of startup, shutdown and malfunction  
per 40 CFR 60.8(c).

**Monitoring Requirements:** Per Regulations - None.  
Per Operating Permit - Current gap-filing  
compliance demonstration is the monitoring of  
four parameters indicating electrostatic  
precipitators performance.

**Per Proposed CAM:** A Teledyne Monitor Labs  
Model 360 Laserhawk particulate monitor  
installed in stacks or ducts to serve as an  
indicator of precipitator performance.

**Control Technology:**

Three Cold-side Research Cottrell Electrostatic  
Precipitators (ESP), one per unit.

## **COMPLIANCE ASSURANCE MONITORING PLAN** **Kansas City Power & Light Company's - Montrose Station**

### **Monitoring Approach**

The key elements of the monitoring approach are presented in Table 1. The CAM performance indicators are continuous Particulate Monitors, Model 360 (CEMs), manufactured by Teledyne Monitor Labs (TML), Englewood, Colorado. The Monitors output will be used to provide a reasonable level of compliance assurance by indicating ESP performance. The CEMs readings shall not be used to directly demonstrate compliance with 10 CSR 10-3.060 limits.

**TABLE 1. MONITORING APPROACH**

<b>I. Indicator</b>	Particulate Level of each stack (2 each) or duct (3 each) exhaust, as measured by the output of a continuous PM monitor, TML Model 360. The monitor's output will be recorded in units of pounds PM per cubic feet or pounds PM per megawatt. Correlation between the monitors output and Reference Method will be established during performance tests.
<b>Measurement Approach</b>	PM CEMs in each stack or duct. An Excursion will occur when the hourly PM CEMs reading reaches or exceeds a value equivalent to 1.25 times the highest PM CEMs response value reached during the correlation tests, or 0.9 times the source emissions limit. Corrective action must be taken at this time to bring the unit back within these limits (see section on Inspection/Corrective Action)
<b>II. Indicator Range</b>	The PM monitor indicator range is an hourly average reading covering the full range of measurements made during the initial calibration plus 25%. The indicator range is a calibrated instrument output that offers reasonable assurance of compliance with the PM emissions limit. An Excursion (defined above and in section on Inspection/Corrective Action) triggers corrective action.
<b>III. Performance Criteria</b>	The PM CEMs are installed at locations in each stack or duct chosen to minimize problems due to flow disturbances or varying PM stratification. Prior to installation, measurements shall be made of flow dynamics and/or particulate matter to determine the existence or extent of PM stratification.
<b>A. Representativeness</b>	
<b>B. Verification of Operational Status</b>	Initial correlation tests will be conducted as specified in this document, with a minimum of 9 valid test runs at three different PM concentration levels per stack or duct. The results of these tests will be used to determine the correlation equation and correlation coefficient for each stack or duct. See section on instrument calibration for definition of "valid" test run.
<b>C. QA/QC Practices and Criteria</b>	Daily Zero and Span checks will be made, and the results documented. The instruments will be recalibrated if the Zero or Span values exceed plus or minus 5% of the reference value. In addition, quarterly reference calibrations, routine and recommended periodic maintenance procedures will be performed in accordance with the Manufacturer's instructions.

D. Monitoring Frequency	The PM concentration of the stacks is monitored continuously.
E. Data Collection Procedures	The DAHS retains all hourly average PM concentration data, plus all daily Zero-Span calibrations. Alarms will signal an instrument malfunction or excursion.
F. Averaging Period	One minute average PM concentration data are used to calculate hourly block averages.

### **Monitoring Approach Justification**

#### **Background:**

The pollutant specific emission units are three tangentially-fired steam electric boilers. Unit 1 routes exhaust to a dedicated stack, while Units 2 and 3 route exhaust to a common stack. Units 1 and 2 are rated at 1668 MMBtu/hour, while Unit 3 is rated at 1640 MMBtu/hour. Each boiler has a dedicated ESP, which controls particulate emissions. All three units were constructed before April 3, 1971, and are therefore considered "existing" per 10 CSR 10-3.060. First choice for location of the TML Laserhawk Model 360 PM monitor will be the duct leading to the stack with the alternate location the stack itself. The installation location will be determined by stratification testing.

#### **Rationale for Selection of Performance Indicator**

The CAM indicator selected is an "In-Situ" Particulate Monitor CEMs based on light scattering principles, Model 360 Laserhawk, manufactured by Teledyne Monitor Labs, Englewood, CO. The rationale for the choice of this specific approach is as follows:

Continuous PM monitors are widely used to measure and report PM emissions in many parts of the world and considered to be reliable real-time indicators of actual mass concentrations.

Rather than using a COMs as a precursor to further action (i.e. calculation of PM emissions via ESP model evaluation) the continuous PM monitor output can directly trigger the need for corrective action and/or reporting obligations.

The TML instrument has been designed and developed leveraging off prior backscattering technologies of its Model 300L backscatter device and its Model 500C, 550 and 560 COMs. All models have hundreds of applications throughout the world and TML is the number one supplier of compliance opacity monitors in the world with over 3,500 installations.

**COMPLIANCE ASSURANCE MONITORING PLAN  
Kansas City Power & Light Company's - Montrose Station**

The TML instrument has an excellent record for reliability and low maintenance and is widely known within every EPA region and within each state.

The TML Model 360 is an extension of its Model 300L which was installed in over 100 applications. The new Model 360 has been field-tested and has met PS-11 and Appendix F Procedure 2 specifications.

The TML instrument is or can be compatible with existing DAHS system, which can readily be set up to record the appropriate averages, calibrations and signal for instrument malfunction or PM exceedences. The I/O interface can use analogs, digital inputs, dry contacts, 232, 422, or 485 interface capabilities. Ethernet capability will be available in the near future.

**Instrument Calibration**

- a. **General and Pre-Test Monitoring Period.** The instruments will be calibrated based on the boiler load, coal, and ESP characteristics and any other performance or test data deemed applicable. Reference method measurements will be conducted in accordance with accepted method standards (normally EPA Methods 5 or 17) and compared with the integrated (arithmetic average) PM CEMs output over the reference method test period as described below.

The Model 360 will be installed at a vertical stack location in each stack or horizontal in the duct as recommended by KCP&L. From a practical perspective, this would be a location with existing plat-forming, access and power. The monitors will be initially operated for a period of approximately 30 days under various operating conditions to identify conditions necessary to produce three target concentration levels for the correlation testing (see below). During the 30-day pre-test monitoring period the following key operating parameters will be recorded on each stack:

Monitor Output  
Plant Load  
ESP Voltage and Current Readings

- b. **Correlation/Performance Testing.** A minimum of nine valid runs (e.g. 3 PM concentration loads and 3 tests per condition) will be used to obtain the correlation equation and correlation coefficient on each stack or within each duct. A run will be declared "not valid" only when performed during a time when conditions are clearly not representative of normal operations, including periods of startup, shutdown and malfunction. The correlation coefficient will be calculated according to equation 11-3 of PS-11, and the correlation

**COMPLIANCE ASSURANCE MONITORING PLAN  
Kansas City Power & Light Company's - Montrose Station**

coefficient will be calculated according to equation 11-14 of the referenced document.

- c. Tests should be performed at three different PM concentration levels, with a minimum of three tests at each level, if possible. Level 1 encompasses the range from 0 to 50% of the maximum PM concentration available. Level 2 should range from 50% to 75% of the maximum concentration, and Level 3 75% to 100% of the maximum concentration. The source should be operated over the complete range of expected conditions, so as to assure that the data produced is representative. The data gathered during the 30-day pre-test monitoring period shall be used to produce the desired concentrations for the test runs on each stack or within each duct. The Montrose Generating Station operates on 100% sub-bituminous, Powder River Basin coal, except during startup, so the fuel should not be a major variable in the correlation testing.
- d. During correlation testing, the reference method data and PM CEMs measurements will be converted into units of pounds PM per MMBtu to establish limits comparable to the regulatory standard (0.20 lbs/MMBtu). Once established, these limits will be converted into units of pounds PM per actual stack gas volume, or pounds of PM per megawatt. During operation after testing, the CEMs output, and determination of PM levels with respect to limits, will be conducted only in units of pounds per actual stack gas volume or pounds PM per megawatt.
- e. The correlation coefficient ( $r$ ) for each stack or duct, resulting from the calibration testing must be greater than or equal to 0.75.
- f. Once the correlation equation has been determined for each stack or duct, it will be applied to PM CEMs data collected by the Data Recorder.
- g. Based on the results of the reference method measurements, the data will be documented in a manner similar to the example shown in Table 2, and plotted as shown in Figure 1. The point at which an alarm occurs, as well as a reporting requirement and corrective action, will be determined when the hourly average of the PM CEMs output reaches the lower of the following limits:
  - A value equivalent to 1.25 times the highest PM CEMs response value reached during the correlation tests.
  - A value equivalent to 0.9 times the source emission limit.

**Inspection/Corrective Action**

In the event of an excursion (1-hour CEMs reading indicative of 1.25 times the highest PM CEMs response value reached during correlation tests, or 0.9 times

## **COMPLIANCE ASSURANCE MONITORING PLAN**

### **Kansas City Power & Light Company's - Montrose Station**

the source emissions limit) KCP&L will take steps to identify and correct any operational conditions that may be contributing to the excursion. The operational checks will be made as soon as practicable and may include:

- ESP field checks (T/R voltage, current, spark rate)
- Visual inspection of control equipment
- Unusual fuel characteristics
- Boiler upset conditions

#### **QA/QC Criteria**

Factory supplied filter standards will be used to calibrate the instruments at a reference zero and upscale span value. These calibration standards will be maintained in accordance with manufacturer's recommendations. Following this calibration an internal "zero-span" cycle will be initiated, thus establishing initial values for future reference. Daily "zero-span" cycles will follow with the results stored in the data system and compared with the initial values. Should either the "zero or span" value error exceed plus or minus 5% of the starting value, an alarm will be initiated to signal the need for recalibration of the instrument to the factory standards. In addition, a quarterly reference calibration will be performed as described in the instrument operations manual. The factory standards will be used to measure instrument response at a zero and upscale value. Should either of these readings exceed the factory standard by more than plus or minus 5% of the full-scale measurement range the instrument will be reset to the factory standard values. Finally, routine scheduled maintenance procedures will be established in accordance with manufacturer's recommendations.

#### **Data Acquisition Needs**

The data system will be set up to perform the following tasks:

- Record the analog output of the PM CEMs.
- Calculate emissions values, in the units of the required standard, and according to the correlation(s) established during the PM CEMs calibration.
- Store the hourly averages of the calculated emissions values.
- Record the daily "zero-span" calibration results.
- Initiate an alarm if any daily zero or span value exceeds the error limit of plus or minus 5%
- Initiate an alarm if the hourly averaged PM CEMs emission value reaches or exceeds the limit value as defined earlier.
- Initiate an alarm on the occurrence of a malfunction status indicator from the Model 360 Laserhawk.

**COMPLIANCE ASSURANCE MONITORING PLAN**  
**Kansas City Power & Light Company's - Montrose Station**

**REFERENCES**

1. *Notice of Data Availability and Request for Comments*, FRL-5941-4, Federal Register, Vol. 2, No. 249 (December 20, 1997).
2. *Results of Continuous PM Monitor Testing at Pleasant Prairie Power Plant*, Ralph L. Roberson, Jon Konings and Charles E. Dene, EPRI CEMs Users Group Meeting, May 16-18, 2001, Charlotte, NC.
3. 40 CFR 60, Appendix B, Performance Specification 11 - Specification and Test Procedure for Particulate Matter Continuous Monitoring Systems at Stationary Sources.

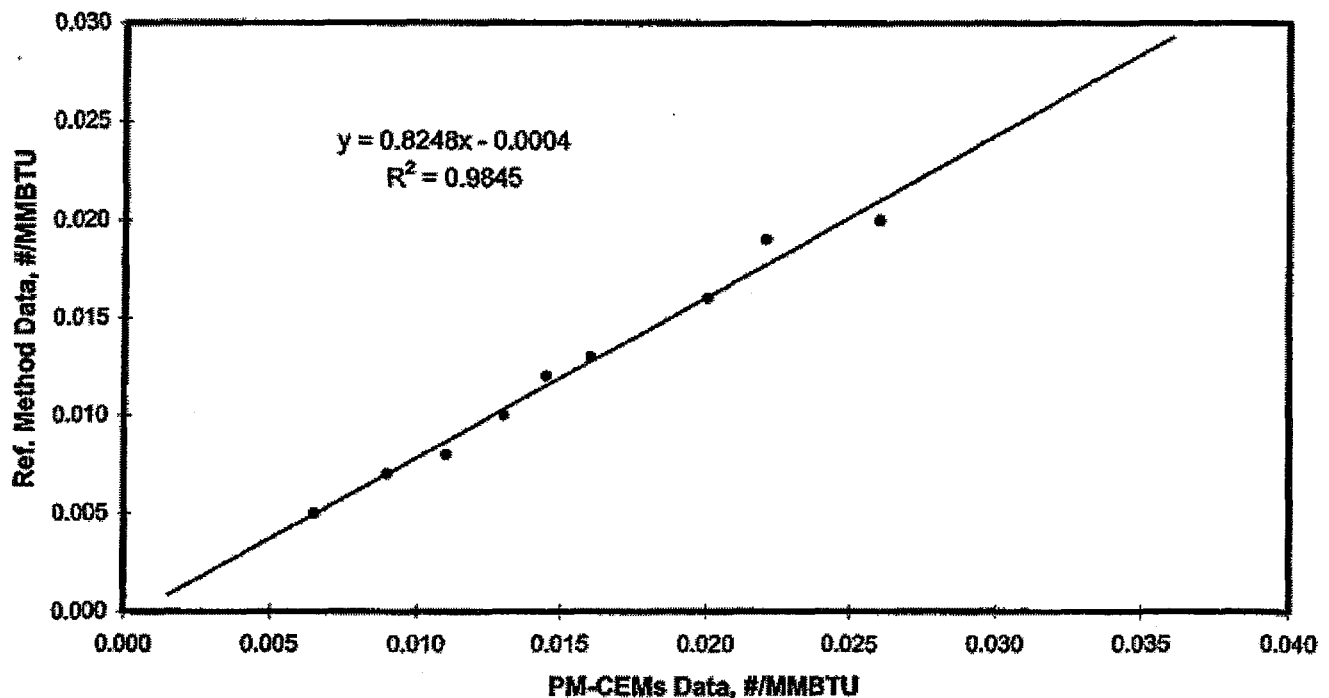


## COMPLIANCE ASSURANCE MONITORING PLAN Kansas City Power & Light Company's - Montrose Station

Table 2. - Example

Date	Run #	PM Level	Reference Method Data	PM CEMS Data
	1	1	0.0050	0.0065
	2	1	0.0070	0.0090
	3	1	0.0080	0.0110
	4	2	0.0100	0.0130
	5	2	0.0120	0.0145
	6	2	0.0130	0.0160
	7	3	0.0160	0.0200
	8	3	0.0190	0.0220
	9	3	0.0200	0.0260
Correlation Equation:			$y = .8248x - 0.0004$	
Highest PM CEMS Reading:			0.0260	
Limit 1 (Highest PM CEMS X 1.25):			0.0325	
Limit 2 (0.9 X Emissions Limit):			Calculated	

Figure 1. Calibration Graph Example



"Haas Dan" <Dan.Haas@kcpl.com>  
05/22/2006 02:40 PM

To "Ken Volmert" <ken.volmert@dnr.mo.gov>  
cc "Kelsay David" <David.Kelsay@me00.KCPL.com>,  
"Gates Laurie" <Laurie.Gates@me00.KCPL.com>,  
"Brown Gary" <Gary.Brown@me00.KCPL.com>,  
"May Pat" <Pat.May@me00.KCPL.com>,  
"Ling Paul" <Paul.Ling@me00.KCPL.com>  
Subject RE: CAM Plans

Ken,

I am attaching a copy of the latest schedule for the Montrose CAM plan, as well as, a draft copy of the QA/QC plan document. You will note that the QA plan calls for daily calibrations, Quarterly Absolute Correlation Audits and a Response Correlation Audit every three years. These are our suggestions for the proper QA/QC requirements for the CAM and Title V Operating permits. Please let me know if you would like to discuss this further.

#### SCHEDULE

April 7-17 Install stratification test ports on all three ducts.

Week of May 22nd Have stratification tests completed on all 3 unit duct (Burns and Mac).

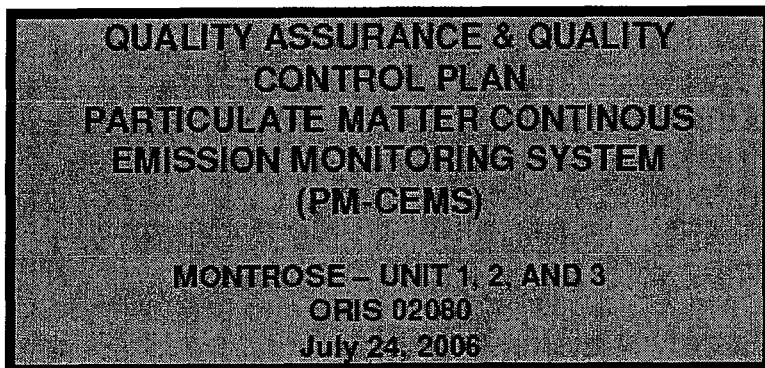
July 1st Have Particulate Monitors on site; also will have cables, conduit, communication equipment, etc. ready to go. Monitor Labs will provide final QA/QC manual with monitors.

July 15th Have Particulate Monitors installed, begin testing (Burns and Mac to do testing).

September 1st Begin 30 day test period for monitors.

October 1st Monitor testing complete and reporting valid data.

The results of the testing this week will determine whether placing the monitors in the ducts will be acceptable, or whether we have to go back to looking at the stack location. This schedule is of course subject to change.



Prepared by:

Teledyne Monitor Labs, Inc • 35 Inverness Drive East • Englewood, CO 80112

Revision Number: \_\_\_\_\_

Date of Revision: \_\_\_\_\_

## **SECTION 1 – THE QUALITY ASSURANCE PLAN.....1**

### **1.1 QUALITY ASSURANCE POLICY, GOAL AND OBJECTIVES.....1**

### **1.2 DISTRIBUTION AND DOCUMENT CONTROL.....2**

#### **1.2.1 MAINTENANCE OF THE QA/QC PLAN.....2**

### **1.3 ORGANIZATION AND RESPONSIBILITY.....2**

#### **1.3.1 PLANT MANAGER.....3**

#### **1.3.2 Environmental COMPLIANCE ADMINISTRATOR (ECA).....3**

#### **1.3.3 Instrumentation technician (IR).....3**

### **1.4 FACILITIES, EQUIPMENT, AND SPARE PARTS INVENTORY.....3**

#### **1.4.1 PARTICULATE MATTER CONTINUOUS EMISSION MONITORING SYSTEM.....3**

#### **1.4.2 RECOMMENDED SPARE PARTS AND STACK DRAWINGS.....4**

### **1.5 METHODS AND PROCEDURES - ANALYSIS AND DATA ACQUISITION.....4**

### **1.6 CALIBRATION AND QUALITY CONTROL CHECKS.....4**

### **1.7 MAINTENANCE - PREVENTIVE.....4**

### **1.8 SYSTEMS AUDITS.....5**

### **1.9 PERFORMANCE AUDITS.....5**

#### **1.9.1 ABSOLUTE CORRELATION AUDIT (ACA).....5**

#### **1.9.2 RESPONSE CORRELATION AUDIT (RCA).....6**

#### **1.9.2 RELATIVE RESPONSE AUDIT (RRA).....7**

### **1.10 CORRECTIVE ACTION PROGRAM.....7**

#### **1.10.1 SUGGESTED CORRECTIVE ACTION.....8**

#### **1.10.2 REQUIRED NOTIFICATIONS.....8**

### **1.11 REPORTS.....8**

## **SECTION 2 – STANDARD OPERATING PROCEDURES.....9**

### **2.1 START-UP AND OPERATION.....9**

### **2.2 PM-CEMS INSPECTION AND PREVENTIVE MAINTENANCE.....9**

### **2.3 CALIBRATION PROCEDURES.....9**

#### **2.3.1 DAILY CALIBRATION CHECK.....10**

#### **2.3.2 DAILY PM-CEMS DRIFT ASSESSMENT AND CORRECTIVE ACTION.....10**

### **2.4 PREVENTIVE MAINTENANCE PROCEDURES.....11**

### **2.5 CORRECTIVE MAINTENANCE PROCEDURES.....11**

### **2.6 PERFORMANCE AUDIT PROCEDURES.....12**

#### **2.6.1 ABSOLUTE CORRELATION AUDIT(ACA).....12**

#### **2.6.2 RESPONSE CORRELATION AUDIT (RCA).....13**

#### **2.6.3 RELATIVE RESPONSE AUDIT(RRA).....13**

### **2.7 SYSTEM AUDIT PROCEDURES.....15**

### **2.8 DATA BACKUP PROCEDURES.....16**

### **2.9 TRAINING PROCEDURES.....16**

#### **2.9.1 QUALITY ASSURANCE PLAN.....16**

**2.10 DATA REPORTING PROCEDURES ..... 16**

***APPENDICES***

**PM-CEMS SPECIFICATIONS**

**PERFORMANCE SPECIFICATION 11**

**CALCULATIONS**

**BLANK FORMS**

**APPENDIX A**

**APPENDIX B**

**APPENDIX C**

**APPENDIX D**

## **SECTION 1 – THE QUALITY ASSURANCE PLAN**

This Quality Assurance (QA) Plan is the basis for assessing and maintaining the quality of particulate matter continuous emission monitoring system (PM-CEMS) data. This QA Plan has been prepared for Kansas City Power and Light, operators of three (3) particulate matter continuous emission monitoring systems at the Montrose Generating Station. Section 1 of this plan is intended to outline the basic requirements with more detailed procedures for compliance included in Section 2. Each PM-CEMS output will be used to provide a reasonable level of compliance assurance by indicating electrostatic precipitator (ESP) performance.

Table I below illustrates the PM-CEMS that have been installed at the facility.

**Table I. PM-CEMS installed and certified at KCP&L Montrose Station**

<b>Mfr/Model</b>	<b>Serial Number</b>	<b>Measurement Range</b>	<b>Location</b>	<b>Correlation Test Date</b>
Teledyne Monitor Labs / LaserHawk 360	TBD	TBD	Unit 1	TBD
Teledyne Monitor Labs / LaserHawk 360	TBD	TBD	Unit 2	TBD
Teledyne Monitor Labs / LaserHawk 360	TBD	TBD	Unit 3	TBD

The PM-CEMS are installed to comply with 10 CSR 10-3.060, Maximum Allowable Emission of Particulate Matter from Fuel Burning Equipment Used for Indirect Heating. The emission limit is 0.20 lb lb/MMBTU on a station-wide average basis, except during periods of startup, shutdown and malfunction per 40 CFR 60.8(c). The PM-CEMS will provide emissions data to help in the operation and maintenance of the ESPs installed at this facility. This QA Plan was developed from guidelines by the State of Missouri Department of Natural Resources (MDNR) and the U.S. Environmental Protection Agency.

### **1.1 QUALITY ASSURANCE POLICY, GOAL, AND OBJECTIVES**

Quality Assurance can be defined as the system of activities to provide assurance that the QC is performing adequately.

A QA Plan has two functions:

(1) QA – the assessment of the quality of the data (accuracy and precision) and, (2) QC – activities that maintain or improve data quality. Both functions form a control loop. When accuracy or precision is unacceptable, QC must increase until the quality of data is acceptable.

Quality control functions are usually a series of frequent internal checks, such as system inspections, periodic calibrations, and routine maintenance. Quality assurance, on the other hand, involves less frequent external checks on data quality. These external checks may include independent system audits, third party sampling and analysis for accuracy and precision, comparison to known calibration standards or inter-laboratory audits. This Quality Assurance Plan encompasses both QA and QC functions, and whenever possible, specific activities are identified by the function that is fulfilled by the activity.

The goal of this QA program is the ongoing assessment of the particulate matter limit set in the Montrose Station Title V Operating Permit.

## **1.2 DISTRIBUTION AND DOCUMENT CONTROL**

This QA Plan will be reviewed whenever changes are made to the ESP and/or PM monitoring installation as well as on an annual basis.

A revision tracking system will be provided on the front page of this document and will include:

Revision Number: \_\_\_\_\_  
Date of Revision: \_\_\_\_\_

### **1.2.1 MAINTENANCE OF THE QA/QC PLAN**

To properly maintain the QA Plan, the following activities are monitored:

- (1) The current list of QA/QC plan holders.
- (2) A continuous listing of revisions and updates of the QA/QC Plan as a result of the following:
  - Changes in regulations;
  - Modifications or improvements of QA/QC procedures;
  - Changes in responsible personnel or organization;
  - Replacement of PM-CEMS components;
  - Modifications to operating permit.

## **1.3 ORGANIZATION AND RESPONSIBILITY**

Specific facility personnel are assigned responsibility for the PM-CEMS operational status instrument maintenance and system control. The following are provided as a

guideline, which organize responsibilities for the operation and maintenance of a PM-CEMS.

### **1.3.1 PLANT MANAGER**

Is responsible for reviewing and signing all quarterly reports. The Plant Manager has the ultimate responsibility for all violations.

### **1.3.2 ENVIRONMENTAL COMPLIANCE ADMINISTRATOR (ECA)**

Has overall responsibility for the operation of the PM-CEMS, generation of appropriate reports, and correspondence with the regulatory agencies.

The ECA works closely with maintenance, operations, and instrument technicians to ensure that each PM-CEMS is operated and maintained as required. Reports all major problem associated with the PM-CEMS to the Plant Manager and the Environmental Services Department.

### **1.3.3 INSTRUMENTATION TECHNICIAN (IT)**

The IT is responsible for regular inspection, maintenance/repair and associated documentation of each PM-CEMS. Communicates to facility management all PM-CEMS performance and maintenance problems. Ensures all preventive maintenance checks are performed and documented. Has responsibility for the calibration of the PM-CEMS.

## **1.4 FACILITIES, EQUIPMENT, AND SPARE PARTS INVENTORY**

Each unit is equipped with an ESP to control particulate emissions. Units 2 and 3 exhaust through a common stack and Unit 1 exhausts through a dedicated stack. Continuous particulate matter monitoring will be performed on the exhaust duct of each unit following the ESP.

The PM-CEMS is wired to a programmable logic controller located in the control room and will record data in the existing Data Acquisition System as well as in the Continuous Emission Monitoring System (DAS) in the CEMS building.

### **1.4.1 PARTICULATE MATTER CONTINUOUS EMISSION MONITORING SYSTEM**

The particulate monitoring systems utilized are Teledyne Monitor Labs 360 particulate monitors, located on Units 1, 2, and 3 exhaust duct to the stack(s). Measurement of particulate concentration is accomplished by passing a beam of laser light into the duct and measuring the intensity of the backscattered light.



#### **1.4.2 RECOMMENDED SPARE PARTS AND STACK DRAWINGS**

A list of spare parts is included in the instrument operations manual. Stack drawings and process diagrams are also kept on site and available for review.

#### **1.5 METHODS AND PROCEDURES – ANALYSIS AND DATA ACQUISITION**

The PM-CEMS data acquisition system (DAS) is an automated system that records PM-CEMS data and provides readouts as one-minute averages, which are used in subsequent calculations and report preparation. Reports prepared by the system include alarm, calibration, and emission reports.

The DAS is capable of reading all values over the full range of each measurement device and creates a permanent record of all required measured and calculated data for storage, review, and reporting. A continuous readout in PM lb/mmBtu and boiler operating time are recorded in the CEMS software.

#### **1.6 CALIBRATION AND QUALITY CONTROL CHECKS**

The set of operation and maintenance manuals for all systems components is maintained in the CEMS shelter. These manuals provide complete descriptions of the PM-CEMS including theory, installation, operation, and maintenance.

Factory supplied filter standards are used to calibrate the instrument at a reference zero and upscale span value. These calibration standards will be maintained in accordance with the manufacturer's recommendations. Following this calibration an internal "zero-span" cycle will be initiated, thus establishing initial values for future reference. Daily "zero-span" cycles will follow with the results stored in the data system and compared with the initial values. Should either of the "zero or span" value error exceed  $\pm 4\%$  of the starting value, an alarm will be initiated to signal the need for recalibration of the instrument to the factory standards.

In addition a quarterly reference calibration will be performed as described in the instrument operations manual. The factory standards will be used to measure instrument response at a zero and upscale value. Should either of these readings exceed the factory standard by more than  $\pm 4\%$  of the full-scale measurement range, the instrument will be reset to the factory standard values. Finally, routine scheduled maintenance procedures will be established in accordance with the manufacturer's recommendations.

#### **1.7 MAINTENANCE - PREVENTIVE**

The preventive maintenance program for the PM-CEMS is based on the equipment manufacturer's recommended procedures.

## **1.8 SYSTEMS AUDITS**

A systems audit involves a general inspection of the monitoring system. It is intended as a walk through audit and used to provide a quick assessment of the availability of data, general effectiveness of operation and maintenance, and the completeness of recordkeeping procedures. Systems audit involves the following areas:

- Administrative
  - Maintenance logs – timely, complete
  - Recordkeeping – completeness, available
  - Verify correct range values entered into the data acquisition system
- Technical
  - Printer – operational, legible printouts consistent with process conditions
  - Data system – cabinets clean, areas maintained
  - Monitor enclosure – clean, all systems operational
  - Purge air blowers – operational

## **1.9 PERFORMANCE AUDITS**

The purpose of Procedure 2 is to establish the minimum requirements for evaluating the effectiveness of quality control (QC) and quality assurance (QA) procedures and the quality of data produced by the particulate monitor continuous monitoring system. Procedure 2 applies to PM-CEMS used for continuously determining compliance with emission standards or operating permit limits as specified in an applicable regulation or permit. Montrose Station is using the PM-CEMS as an indicator of PM emissions and therefore will meet the frequency requirements for relative response and response correlation audits as stated below. Montrose will complete the daily zero and upscale drift checks, absolute correlation audit as suggested in Procedure 2.

### **1.9.1 ABSOLUTE CORRELATION AUDIT (ACA)**

An Absolute Correlation Audit is required once each calendar quarter but no sooner than 2 months after the previous ACA. ACAs are not required in quarters in which a Response Correlation Audit (RCA) is performed.

- Challenge the PM-CEMS three times at each audit point and use the average of the three responses in determining accuracy at each audit point. Audit points are audit filters that produce particulate levels of known values.

Audit Point	Audit Range
1	0 - 20 percent of measurement range
2	40 -60 percent of measurement range
3	70 -100 percent of measurement range

- Operate the PM-CEMS in the mode, manner, and range specified by the manufacturer.
- Challenge the PM-CEMS at each audit point for a sufficient period of time to ensure that the PM-CEMS response has stabilized.
- Alternate filter insertions so that no filter is measured twice in succession during the audit.
- The difference between the actual known value of the audit standard and the response of the monitor is used to assess the accuracy of the PM-CEMS.
- The beginning of the out of control period is the time corresponding to the completion of an unsuccessful ACA. The end of the out of control period is the time corresponding to the completion of the subsequent successful audit.
- During an out of control period the CEMS data may not be used in calculating emission compliance nor be counted towards meeting minimum data availability.
- The PM-CEMS is considered out of control if the required quarterly absolute correlation audit is not conducted during a calendar quarter.
- A Response Correlation Audit conducted during any calendar quarter can take the place of an ACA required for that quarter.

The criteria for excessive inaccuracy are:

- $>\pm 10\%$  of the average audit value or 7.5% of the applicable standard, whichever is greater (PM-CEMS is out of control).
- Two consecutive ACA failures (i.e., out of control conditions) indicates the QC procedures are inadequate or that the CEMS is incapable of providing quality data.
- Whenever excessive inaccuracies occur for two consecutive quarters, the QC procedures must be revised, modified, or the monitor replaced.

**NOTE:** The ACA must be conducted using the calibration kit with the same serial number as the particulate monitor.

#### **1.9.2 RELATIVE RESPONSE AUDIT (RRA)**

Perform a Relative Response Audit (RRA) annually. Perform a RRA by collecting three (3) sets of simultaneous Reference Method data and Particulate Monitor data. Determine compliance with the RRA using the criteria specified in 40CFR60, Appendix F.

The PM-CEMS is considered out of control if the required RRA is not performed at the interval as specified in the operating permit or regulation.

The RRA will be performed annually and will replace the Response Correlation Audit in the quarter when both audits are due.

### **1.9.3 RESPONSE CORRELATION AUDIT (RCA)**

Perform a RCA by collecting a minimum of twelve (12) sets of simultaneous Reference Method data and Particulate Monitor data once every permit renewal (5 years). To pass an RCA the following criteria must be met

- For all 12 data points, the PM-CEMS response value can be no greater than the greatest PM-CEMS response value used to develop the correlation curve;
- For 9 of the 12 data points, the PM-CEMS response value must lie within the PM-CEMS output range used to develop the correlation curve.

The criteria for excessive inaccuracy are:

- At least 75% of a minimum number of 12 sets of PM-CEMS/reference method measurements from the test must fall within a specified area on a graph developed by the calibration relation regression line over the calibration range and the tolerance interval set at  $\pm 25\%$  of the emission limit.
- The specified area on a graph is (a) bounded by two lines parallel with the calibration regression line, and offset at a distance  $\pm 25\%$  of the numerical emission limit from the calibration regression line on the y-axis and (b) traversing across the calibration range bounded by the lowest and the highest CEMS reading of the calibration test on the x-axis.

The PM-CEMS is considered out of control if the required RCA is not performed at the permit renewal interval (once every 5 years). See 2.6.2 Relative Correlation Audit for details on failure of an RCA. The RCA will replace the Absolute Correlation Audit and Relative Response Audit when done in the same quarter.

See 10.3(8) ...perform the RCA according to the procedures for the PM CEMS correlation test described in PS-11, section 8.6, except that the minimum number of runs required is 12 in the RCA instead of 15 as specified in PS-11.

### **1.10 CORRECTIVE ACTION PROGRAM**

Whenever the PM-CEMS is found to be "out of control" the data generated from the system will not be used to demonstrate compliance with permit limits or data capture requirements. Corrective action is performed "as soon as possible" after determining the PM-CEMS is not operating within 40 CFR 60, Appendix F specifications.

Corrective action is defined as the resolution of problems that occur on a non-routine basis.

### **1.10.1 SUGGESTED CORRECTIVE ACTION**

References to specific PM-CEMS troubleshooting procedures are listed in the Instrument's Operation Manual.

### **1.10.2 REQUIRED NOTIFICATIONS**

Immediately after learning a PM-CEMS is non-operational, the following individuals will be notified:

- Control Room Operator – who will notify the Environmental Compliance Administrator (ECA) and/or Instrument Technician (IT);
- Instrumentation Technician – will make the PM-CEMS operational;
- ECA – will notify Environmental Services Department and regulatory agency (as required).

### **1.11 REPORTS**

Documentation of QA/QC data and information is an integral part of any QA Plan. This section describes reports and other records that provide adequate documentation of QA/QC activities. The two primary means of documentation used are:

- Data Acquisition System (DAS).
- Manually prepared QA/QC forms, logs and reports.

During QA audits, the DAS will be operated to collect data in a normal fashion, and will be able to print one-minute emission values for real time comparison with audit standards. The DAS is used not only to document QA/QC data and information, but also serves as the PM-CEMS data acquisition and processing system.

A number of written QA/QC reports are needed to provide supporting documentation of the continued operation of the PM-CEMS in an acceptable manner. All reports are used to notify individuals of problems related to operation of the PM-CEMS. Completion of these reports is intended to assist in identifying the need for remedial maintenance, training, or supply action, as well as the need to revise operating procedures for this QA Plan.

## **SECTION 2 – STANDARD OPERATING PROCEDURES**

Quality control checks may be defined as those checks performed on a routine basis such as system inspections, periodic calibrations and routine maintenance.

**LASER SAFETY WARNING:** Any person working on or auditing the particulate monitoring equipment must be adequately trained in Laser Safety and have thoroughly reviewed the operations manual due to the inherent dangers in working with Laser equipment.

### **2.1 START-UP AND OPERATION**

The Shift Foreman maintains a detailed written procedure for start-up of the equipment at the facility. The document contains the step-by-step procedures for starting up and shutting down all equipment at the facility.

### **2.2 PM-CEMS INSPECTION AND PREVENTIVE MAINTENANCE**

A CEMS maintenance log is maintained in the CEMS shelter to document system operational status and record any maintenance performed. The DAS electronic file contains a record of the PM-CEMS calibration activities.

The routine inspection begins with a visual inspection of the electrical and plumbing systems and components, which includes air-lines, and support bundles, as applicable. This procedure allows early detection of accidental damage to the PM-CEMS.

The Instrument Technician will examine the data acquisition system's computer printouts to verify the computer printouts have the correct time, date, and settings as applicable. A printout of the calibrations is reviewed for excessive calibration drift on a daily basis (Monday through Friday, excepting Monday holidays). A copy of the printout is filed in the CEMS files in the shelter.

Indicator lights and alarms on the system or monitor control panel are examined next. The system indicator lights notify the technician of out-of-range conditions or other potential problems associated with the PM-CEMS. Action is initiated immediately if an indicator light is illuminated; subsequent data acquired may be suspect and will be flagged accordingly.

### **2.3 CALIBRATION PROCEDURES**

The 360 calibration cycle automatically checks and corrects zero and span drift. The calibration cycle can be programmed to activate at selectable hourly intervals, manually

activated from the stack, or externally activated from the programmable logic controller or data acquisition system.

### **2.3.1 DAILY CALIBRATION CHECK**

A daily calibration is performed for the PM-CEMS that is measuring and reporting particulate concentration. Typically the zero and span calibration are programmed to be performed once every 24-hours. The zero calibration is conducted at a measurement level between zero and twenty (0 – 20) percent of instrument measurement range. The span calibration is conducted at a measurement level between fifty and one hundred (50 – 100) percent of instrument measurement range. A printed copy of the daily calibration for the PM-CEMS will be filed or electronically archived. Table II below illustrates calibration ranges of the PM-CEMS.

**Table II. Recommended zero and high level calibration levels**

<b>Emission Point</b>	<b>ZERO VALUE (0 – 20% RANGE)</b>	<b>SPAN VALUE (50 – 100% RANGE)</b>
Unit 1	TBD	TBD
Unit 2	TBD	TBD
Unit 3	TBD	TBD

### **2.3.2 DAILY PM-CEMS DRIFT ASSESSMENT AND CORRECTIVE ACTION**

The PM-CEMS performs a calibration once every 24 hours. The PM-CEMS shall be adjusted when the drift exceeds twice the performance specification. The PM-CEMS are considered out-of-control when:

- (1) Either the zero or span calibration drift exceeds 4 percent the applicable performance specification in 40 CFR 60 for five (5) consecutive days, or
- (2) Either the zero or span calibration drift exceeds 8 percent the applicable performance specification in 40 CFR 60 for any single calibration.

Table III below illustrates out-of-control calibration drift criteria for the PM-CEMS.

**Table III. Calibration Drift Criteria**

<b>Monitor</b>	<b>Level at which CEM shall be adjusted</b>	<b>Level at which CEM is Out-of-Control</b>	
		<b>Any one day</b>	<b>Any five consecutive days</b>
Unit 1	4%	8%	4%
Unit 2	4%	8%	4%
Unit 3	4%	8%	4%

If an out-of-control condition exists, corrective action will be initiated immediately. Corrective action steps are identified in the Teledyne Monitor Labs Operation and Maintenance Manual or the Analyzer Operator Manual. Corrective action steps may include: adjustment of the electronics and potentiometers, care of the optics, replacement of the dessicator and/or purge blower air filter. Calibration drift checks will be repeated following corrective action to verify the PM-CEMS meets calibration requirements and is no longer out-of-control.

During an out-of-control period, the data collected by the PM-CEMS will not be used in determining particulate emissions compliance; nor will it be counted toward meeting the minimum data availability requirements.

## **2.4 PREVENTIVE MAINTENANCE PROCEDURES**

The recommended maintenance schedule is used initially as a guideline and then adjusted for the application following actual field experience. Preventive maintenance checks and procedures are identified in the Maintenance and Trouble Shooting Section of the analyzer Operator Manual.

Some items in the recommended periodic maintenance chart, such as filter changes, will not exhibit a failure condition until probable damage to other components has resulted. These items require special attention for determining replacement frequency. Close and continuous observation of the operating characteristics of the system, with particular notation of any shift, either sudden or prolonged, in one direction of any of the many visual indicators in the system, should prompt a maintenance response and prevent loss of data and/or equipment damage.

The system's equipment alarms are indications that maintenance is required. They do not necessarily indicate the data is invalid. However, they do indicate that the system is operating outside of a design tolerance and inaccurate data and equipment damage will occur if the system is allowed to continue operation with the problems. For this reason, the alarms are exercised on a regular basis to assure that they are operational.

One of the best indications of system performance is the validity of the data it is generating. Daily scrutiny of the daily calibration results will indicate whether or not there is a need for maintenance.

## **2.5 CORRECTIVE MAINTENANCE PROCEDURES**

A trouble-shooting section is included in each analyzer Operator Manual.

Zero and calibration drift checks will be conducted immediately prior to any maintenance, if possible. Additionally, zero and calibration drift checks will be conducted immediately following any maintenance. If the post-maintenance zero or calibration drift checks show drift in excess 4 percent of the applicable performance specifications, recalibration is conducted in accordance with the Operator Manual.



## **2.6 PERFORMANCE AUDIT PROCEDURES**

### **2.6.1 ABSOLUTE CORRELATION AUDIT (ACA)**

ACAs are required on a quarterly basis, unless an RCA is conducted in that quarter. The ACA is completed and the results are determined using the procedures and calculations contained in 40 CFR 60, Appendix F (Equation 2-1, to this document). Acceptable ranges for the ACA filters are included in Table IV.

**TABLE IV. ACA Audit Filters**

<b>Emission Point</b>	<b>LOW (0 – 20% of Range)</b>	<b>MID (40 – 60% of Range)</b>	<b>HIGH (70 – 100% of Range)</b>
Unit 1	TBD	TBD	TBD
Unit 2	TBD	TBD	TBD
Unit 3	TBD	TBD	TBD

#### **For EACH Audit**

1. Record the requested data in the appropriate blocks on the data sheet(s) for the analyzer(s) being checked. Each analyzer should have its own data sheet.
2. Open the optical head on the particulate monitor.
3. Install the calibration jig onto the optical head.
4. Alternately insert each of the 3 known particulate standards into the calibration jig. Leave each filter in place for 5 minutes to ensure stable readings. Repeat this process until 3 readings have been made with each filter.
5. Uninstall the calibration jig from the optical head.
6. Close the optical head so that the instrument is reading process conditions again.
7. Calculate and record, to the hundredth decimal place, the average of the monitor's responses (A) for each level of calibration filter (high-, mid- and low-)
8. Using the equations in Appendix F, Equation 2-1, calculate the mean value and correlation accuracies for each particulate level.

The monitor passes the ACA if, at all three levels of filters, the percentage difference is  $\pm 10.0$  percent of the average audit value or the percentage difference  $\pm 7.5$  percent of the applicable particulate standard, whichever is greater. If these criteria are not met at

any level, the monitor is considered out-of-control. Indication will be made on the data sheet(s) whether the monitor(s) passed or failed the calibration error test.

### **2.6.2 RELATIVE RESPONSE AUDIT (RRA)**

The Relative Response Audit requires the support of an independent stack sampling team. Three (3) simultaneous measurements are taken by the contracted test team and the particulate monitor in accordance with the reference methods specified in 40CFR60, Appendix B, Performance Specification 11. It is recommended that the test team perform duplicate measurements to ensure the maximum accuracy of the sampling.

The RRA will be conducted annually unless an RCA is completed during that same period then an RRA will not be required.

The monitor passes the RRA if all of the following occur:

- (1) The response from all three measurements is less than the highest response used to generate the correlation curve,
- (2) At least two of the three responses lie within the PM-CEMS output range used to develop the correlation curve, and
- (3) At least two of the three responses fall within the area specified in the correlation curve and defined as the regression line  $\pm 25\%$  of the numerical emission limit.

### **2.6.3 RELATIVE CORRELATION AUDIT (RCA)**

The Relative Response Audit requires the support of an independent stack sampling team using procedures for the PM-CEMS correlation test described in PS-11, section 8.6. The RCA will be conducted once every permit renewal (5 years) period. The RCA will replace the RRA and ACA when required in the same period.

The correlation test includes:

- (1) paired reference method trains for collecting manual PM data to identify and screen the reference method data for imprecision and bias;
- (2) test runs may be shorter than 60 minutes in duration (e.g., 20 to 30 minutes);
- (3) convert the reference method results to units consistent with the conditions of the PM CEMS measurements (e.g., mg/acm);
- (4) during each test run coordinate process operations, reference method sampling and PM CEMS operations to ensure that the process is operating at the targeted conditions

- a. coordinate the start and stop times of each run between the reference method sampling (if batch sampling start the reference method at the same time as the PM CEMS sampling);
  - b. note the times for port changes (and other periods when the reference method sampling may be suspended) on the data sheets (to make any required adjustments);
  - c. properly align the time periods for the PM CEMS and the reference method measurements to account for the PM CEMS response time;
    - i. conduct a minimum of 12 sets of CEMS and reference method measurements – additional measurements may be completed and rejected but a minimum of 12 sets is required;
    - ii. report all data, including rejected data;
    - iii. up to five test runs may be rejected without explanation;
    - iv. explicit explanations are required for greater than five rejected runs;
- (5) simultaneous PM CEMS and reference method measurements must be performed in a manner to ensure that the range of data that will be used to establish the correlation for the PM CEMS is maximized. First attempt to maximize the correlation range by following the procedures described in 5 (i) through (iv) (this section). If the three levels described in (i) through (iv) cannot be achieved, use the procedures in section 8.6(5);
- i. attempt to obtain the three different levels of PM mass concentration by varying process operating conditions, varying PM control device conditions, or by means of PM spiking;
  - ii. the three PM concentration levels used in the correlation tests must be distributed over the complete operating range experienced by the source;
  - iii. at least 20 percent of the minimum 12 measured data points should be contained in each of the following levels:
- | Correlation Test / RCA |   |
|------------------------|---|
| Level 1                | from no PM (zero concentration) emissions to 50 percent of the maximum PM concentration |
| Level 2                | 25 to 75 percent of the maximum PM concentration  |
| Level 3                | 50 to 100 percent of the maximum PM concentration                                       |
- iv. although the above levels overlap, only apply individual run data to one level;
- (6) if three distinct levels of PM concentration cannot be obtained, perform correlation testing over the maximum range of PM concentrations that is practical for the PM CEMS;
- (7) ensure that the range of the data used to establish the correlation for the PM CEMS is maximized by the following:
- a. zero point data for in-situ instruments is obtained by removing the instrument from the stack and monitoring ambient air on a test bench or

- b. perform a manual reference method measurement when the flue gas is free of PM emissions or contains very low PM concentrations (e.g., when the process is not operating, but the fans are operating) or
  - c. if neither of the steps are possible, estimate the monitor response when no PM is in the flue gas (e.g., 4 mA = ) mg/acm).
- (8) Failure of an RCA requires the following actions:
- a. Combine RCA data with data from the active PM-CEMS correlation and perform the mathematical evaluations defined in PS-11 for development of a PM-CEMS correlation, including examination of alternate correlation models (i.e., linear, polynomial, logarithmic, exponential, and power). If the expanded data base and revised correlation meet PS-11 statistical criteria use the revised correlation;
  - b. If the criteria specified above (in a. above) are not achieved, develop a new PM-CEMS correlation based on revised data. The revised data set must consist of the test results from only the RCA. The new data must meet all requirements of PS-11 to develop a revised PM-CEMS correlation for 12 sets. The PM-CEMS is considered to be back in controlled status when the revised correlation meets all of the performance criteria specified in section 13.2 of PS-11;
  - c. If the actions specified above (in a. and b.) do not result in an acceptable correlation, evaluate the cause(s) and comply with the actions below within 90 days after the completion of the failed RCA:
    - i. Completely inspect the PM CEMS for mechanical or operational problems, repair the PM CEMS and repeat the RCA;
    - ii. If you must relocate the PM CEMS to a more appropriate measurement location perform a new correlation test according to the procedures specified in PS-11;
    - iii. The characteristics of the PM or gas in the flue gas stream may have changed such that the PM CEMS technology is no longer appropriate. If this is the case, install a PM CEMS with measurement technology that is appropriate for the flue gas characteristics. Perform a new correlation test according to the procedures specified in PS-11;
    - iv. If the corrective actions above (3i through 3iii) were not successful, petition the regulators for approval of alternative criteria or an alternative for continuous PM monitoring.

## **2.7 SYSTEM AUDIT PROCEDURES**

System audits will be performed and recorded in the maintenance logbook. The following checks will be recorded during the system audit:

- (1) Multiday calibration reports for the previous seven (7) days for all PM-CEMS. Check for trends in drift.
- (2) Verification that correct span values are entered into the computer.

- (3) Examination of the PM-CEMS, noting any alarms displayed and/or that the readings are consistent with monitor operation.

Quarterly system audits will be performed to:

- (1) Check maintenance logbooks for timely and completed repairs;
- (2) Determine the printer is operational and printout is legible, readings are consistent with process conditions;
- (3) Acknowledge that the computer and monitor areas are clean and well maintained;
- (4) Determination that the purge air blower is operational and alignment of opacity monitor is correct.

## **2.8 DATA BACKUP PROCEDURES**

The PM-CEMS data are retained on a data acquisition and handling system (DAS). Particulate Emissions Data is backed up as part of the network or tape backup procedures used for all emissions data collected at the facility. The DAS printouts are stored in a secure area.

## **2.9 TRAINING PROCEDURES**

Training is an essential element of a successful QA/QC program.

### **2.9.1 QUALITY ASSURANCE PLAN**

All employees directly involved in the PM-CEMS program must review this QA/QC Plan, and the applicable EPA requirements (i.e., 40 CFR 60). As with the QA Plan, all effected employees must, at a minimum, be familiar with and review appropriate standard operating procedures .

## **2.10 DATA REPORTING PROCEDURES**

The results from each audit or the routinely generated particulate data are reviewed prior to it being included into a summary report.

As part of the operating permit requirements, all PM-CEMS data are made available for review, in the form of a computerized database or printed PM lb/mmBtu logs, for 36 months. Quarterly compliance reports are submitted to the MDNR within 30 days of the ending quarter as defined in the operating permit. All data will be maintained for the life of the current Title V Operating Permit (5 years).

### **III. APPENDICES**

## **APPENDIX A**

### **PM-CEMS SPECIFICATIONS**

## **APPENDIX B**

### **PERFORMANCE SPECIFICATION 11**



## **APPENDIX C**

### **CALCULATIONS**

- (1) Plot each of the PM CEMS and reference method data sets from an RCA or RRA on a graph based on the PM CEMS correlation line to determine if the criteria in 10.4(5) or (6) have been met
- (2) Equation 2-1 is to be used to calculate ACA accuracy for each of the three audit points
- (3) Equation 2-2 and 2-3 are to be used to calculate daily upscale and zero drift.

Eq 2-1 ACA Accuracy

$$\text{ACA Accuracy} = \frac{|R_{\text{CEM}} - R_v|}{R_v} \times 100$$

where:

ACA Accuracy	=	The ACA accuracy at each audit point in percent
$R_{\text{CEM}}$	=	PM CEMS response to the reference standard
$R_v$	=	The reference standard value

EQ 2-2 Upscale Drift

$$\text{UD} = \frac{|R_{\text{CEM}} - R_u|}{R_u} \times 100$$

where:

UD	=	The upscale drift of PM CEMS in percent
$R_{\text{CEM}}$	=	PM CEMS response to the upscale check value
$R_u$	=	The upscale check value

Eq 2-3 Zero Drift

$$\text{ZD} = \frac{|R_{\text{CEM}} - R_L|}{R_u} \times 100$$

where:

ZD	=	The zero (low-level) drift of PM CEMS in percent
$R_{\text{CEM}}$	=	PM CEMS response of the zero check value
$R_L$	=	The zero check value
$R_u$	=	The upscale check value

August 8, 2005 Proposed Procedure 2 – Quality Assurance Requirements for Particulate Matter Continuous Emission Monitoring Systems at Stationary Sources, Equation 2-1a and 2-1b not included as they are still only proposed.

## **APPENDIX D**

### **BLANK FORMS**

Note that appendices A, B, and D were not included in the CAM Test Plan above, since this information is available elsewhere.

Prepared by:



---

Cheryl Steffan  
Environmental Engineer